Amateur Radio

VOL. 50, No. 10 OCTOBER, 1982

JOURNAL OF THE WIRELESS INSTITUTE OF AUSTRALIA

This month's features include:

- ★ *MESSAGE FROM THE MINISTER FOR COMMUNICATIONS*
- ★ *FEDERAL SECRETARY/MANAGER RETIRES*
- ★ *NEW COMPETITION*
- ★ *EQUIPMENT REVIEW — YAESU FT102*
- ★ *TS180S SPEECH UNIT*
- ★ *144 MHz PROPAGATION. VK-JA*

THE YAESU SPECIALISTS

Bail Electronics have the largest range of Yaesu Amateur Radio equipment in Australia.

FT-ONE the ultimate HF rig for SSB, CW, FSK, AM, FM.
General coverage reciever 150 kHz to 30 mHz

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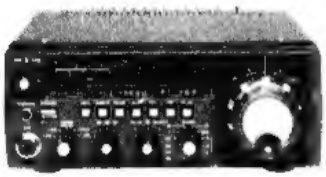

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Handhelds for 2m and 70cm.
- Fully synthesised
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All mode portable/mobile rigs for 2m, 6m, 70cm. The "go anywhere" rigs.

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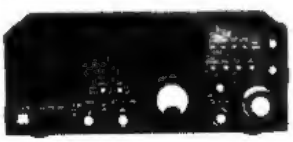

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Stan Roberts
VK 3BSR

Published monthly as the official journal by the Wireless Institute of Australia, founded 1910.

ISSN 0002 - 6859.

VOL. 50, No. 10

OCTOBER 1982

Registered Office:
3/105 Hawthorn Road,
Caulfield North 3161.
Tel. (03) 528 5962

Enquiries and material to:
The Editor
PO Box 150, Toorak, Vic. 3142

Copy is required by the **first of each month.** Acknowledgement may not be made unless specially requested. All important items should be sent by certified mail. The editor reserves the right to edit all material, including Letters to the Editor and Hamads, and reserves the right to refuse acceptance of any material, without specifying a reason.

Material should be sent direct to **P.O. Box 150, Toorak, Vic., 3142,** by the **25th of the second month preceding publication. Phone: (03) 528 5962.** Hamads should be sent direct to the same address by the **1st of the month preceding publication.**

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Production: BETKEN PRODUCTIONS
5 Masefield Avenue, Mooroolbark, 3138

Laser Scanned Colour Separations by: QUADRICOLOUR INDUSTRIES PTY. LTD., Graphic Division.
22-24 Glenvale Crescent, Mulgrave, 3170
Tel.: (03) 560 2222

Printers: WAVERLEY OFFSET PUBLISHING GROUP
Geddes Street, Mulgrave 3170
Tel.: (03) 560 5111

Photographic film and processing material courtesy AGFA-GEVAERT LTD. AUSTRALIA

amateur radio

...in this issue...

DEPARTMENTS

COVER PHOTO

Cover Story see Page 9

Photo courtesy of Austral International Press Agency, Box 5352, GPO, Sydney. Phone 439 8222.
Rex Features Ltd.
Mauro Carraro Photographer.

a word from your EDITOR

Bruce Bathols VK3UV

URGENT

NOTICE TO ALL AR CONTRIBUTORS AND SUB EDITORS (INCLUDES ARTICLES, LETTERS, HAMADS)

Considerable delays and difficulties have been experienced in the processing of some items for publication during recent times.

To enable proper editorial corrections to be carried out, please ensure that material submitted conforms with the following:

1. Use one side of paper only.
2. Double space typing.
3. Legible printed hand writing will be accepted. Write on each second line.
4. Leave at least a 3 cm margin on the left side of the sheet.

Items NOT submitted as outlined above will be deferred.

PLEASE USE THOSE TRAM TICKETS FOR WRAPPING YOUR MEAT, NOT HAMADS.

Bruce VK3UV
Editor

USING LAMPS, LEDS AND NEONS

How many of us, I wonder, realize that operating these lamps from DC greatly shortens their lives, compared with the use of a low-impedance AC source? One reason is that DC is often fed to the lamp through a series resistor or through a semi-conductor device. Unfortunately the filament resistance of a lamp increases with age, so that the voltage across any lamp forming part of a resistor chain will gradually increase. Even more deadly is the uneven evaporation of the filament (causing notches) that, for reasons not fully understood, is more serious with DC-operated lamps. It is suggested that AC operated lamps can last from two to ten times as long as those operated from DC. Lamp life is affected, of course, by supply voltage, roughly in accordance with the type of life curves often supplied by the manufacturers. It is, however, important to appreciate that makers' life estimates, etc. are based on the devices being operated in ideal rather than practical conditions. A lamp operating in a flashing mode will normally fail more rapidly. There is a danger of choosing a flashing time that excites mechanical resonances of the filaments with many resonant points, and the adjacent turns may short circuit when a filament vibrates. Switching a lamp on and off at intervals sufficiently long for the filament to cool down will tend to reduce lamp life because of the high inrush current when the cold filament is first switched on. Tungsten filaments, incidentally, are more fragile at room temperature than at operating temperature. Ventilation, usually by encouraging convection of air, keeps bulb temperatures low and will extend the life of the bulb. In comparison with an incandescent lamp, a light-emitting diode (LED), though normally providing less light intensity, can last virtually forever (a well made LED has a half-life of over 20 years of continuous use!) In effect useful life is determined by the gradual loss of light intensity and so tends to be measured to the point where the intensity has dropped to half its original value. But, of course, it is necessary to pay attention to a number of points if such longevity is to be achieved. Do not mix LEDs and lamps in close proximity: the heat from the bulbs can destroy the leds. At high ambient temperatures the light output from a LED decreases; continuous running at 80°C or higher accelerates the loss of intensity. At low temperatures (which can crack the bulb of a miniature lamp) a LED can be extremely efficient. A LED always needs a series (ballast) resistor to limit current. A LED can be operated from AC, but because the reverse breakdown voltage is usually only about 3-6V, it may need a series diode or diode in inverse parallel configuration, in addition to a series resistor. A cut-price LED may well be a device with lower than rated light output, since such devices are often weeded out during manufacture and disposed of at bargain prices. Like most semi-conductor devices, a LED can be damaged by careless soldering; makers often specify a maximum soldering temperature of 260°C for not more than five seconds. When attempting to fit a LED into an 0.1 hole in matrix printed circuit board, note that not all devices have standard lead spacing. Miniature neons have a rated life a good deal better than incandescent lamps but only about 1/10 that of a LED. They last longer on AC than DC (about twice as long) and should not be exposed to high temperatures. An undesirable characteristic of some neons is a tendency to flicker due to movement of the corona discharge.

Reprinted from: Lyrebird, Dec '81

The Hon. N. A. BROWN, QC, MP, Minister for Communications and Minister Assisting the Attorney-General.

MINISTER FOR COMMUNICATIONS
and MINISTER ASSISTING
the ATTORNEY-GENERAL.

The Hon. N.A. Brown QC. MP
Parliament House
Canberra ACT 2600

26 AUG 1982

Dear Peter,

I would like to thank **Amateur Radio** for this opportunity to inform readers of this magazine of a number of recent and proposed developments concerning the Amateur Radio Service in Australia.

As Amateur Radio enthusiasts, you all know how far Amateur Radio has come since the early 1900s. From simple hand-made transmitters and receivers developed by the operators themselves, we have progressed to complex, computerised 'black box' equipment. In those early days, pioneers had to invent and construct their own equipment. Today enthusiasts can buy a dazzling array of electronic components 'off the shelf'. It is not surprising that the regulations governing Amateur Radio have also increased over the years and occasionally need pruning.

The Government has long recognised the value of the Amateur Radio Service. Over the years, it has made an important contribution to radiocommunication services in Australia, especially during emergencies. It also provides valuable technical training for operators, and serves as a medium for international understanding and co-operation. There is every indication that its international value will continue to grow.

As you are aware my Department plans, revises and implements policies controlling use of the radio frequency spectrum in Australia. In general, access to the spectrum is governed by the need to avoid interference with other users. However, the Department's attitude to the Amateur Service has always been to allow as much flexibility as possible to develop new and improved techniques. Recent examples include the authorisation of Narrow Band Voice Modulation techniques and increased flexibility in machine telegraphy. My Department will continue to be receptive to proposals for future improvements.

There have recently been several initiatives in Amateur Radio in Australia:

The most important breakthrough for some years was the relaxation of restrictions on third party traffic. Amateur radio stations are now allowed to pass messages for a third party, providing these are technical or personal and involve no direct or indirect payment. Recently, agreements on third party traffic were reached with the USA and Canada and agreements with other countries are being considered.

Next, as a result of the World Administrative Radio Conference (WARC) in 1979, amateur radio stations in Australia may now share the frequencies 10.1-10.150 MHz with existing fixed stations. The Department has issued the appropriate conditions and guidelines to reduce the risk of interference between amateur and fixed stations. As well, amateurs gave assistance in the Department's task of drafting the new Australian Table of Frequency Allocations expected to be available later this year.

Other initiatives include:

Preparations for World Communications Year (1983)

Amateur radio operators, through the Wireless Institute of Australia, have expressed their willingness to work with other interested groups on the planned National Committee under the aegis of my Department.

Amateur access to the 18 and 24 MHz bands

Another resolution of WARC-79 will allow frequencies between 18.068 and 18.168 MHz to be shared with amateur satellite services, and those between 24.89 and 24.99 MHz (presently occupied by fixed stations) will be made exclusive to amateur stations.

Amateur access to the 50 MHz band

It is likely that amateur access will be expanded into the 50-5.15 MHz band where this will not interfere with the present users, Channel 0 television broadcasters. The conditions of amateur use in Channel 0 reception areas will be clarified under the new Australian Table of Frequency Allocations.

Review of examinations for amateur operators' certificates

The Department has consulted with the Wireless Institute of Australia about the present examination fee structure, unchanged for many years. The increased popularity of amateur radio has brought more candidates seeking examinations each year, and now that my Department is in a full cost recovery situation the fees will be altered to reflect this. The Department is also trying to simplify its examination process and extend subject exemption periods, without lowering internationally recognised standards.

This brief outline of recent developments reflects years of close co-operation between representatives of Amateur Radio in Australia and officers of the Department of Communications. I believe our common interests will ensure equally close co-operation in the future.

Yours sincerely,

N. A. BROWN

Mr. Peter Wolfenden, VK3KAU,
President,
Wireless Institute of Australia,
P.O. Box 150,
Toorak, 3142, VICTORIA

WIA NEWS

THE SEVEN YEARS — PAST

Yes, this column began in AR August 1975 to publicise Federal news — to tell members as clearly and accurately as possible — what is going on in the Federal sphere. All these have been written by the Manager and edited by the Federal President or his nominee over the years.

AR is not like your daily newspaper — merely to be scanned and thrown away. It contains all the available news about your chosen activity. Some items may be transitory but many have a long life. You need the journal for future reference. Some members index subjects to make it easy for themselves when seeking something to settle an argument — the index in AR cannot hope to cover the 1000 and one bits and pieces tucked away in the journal.

The past seven years have seen many changes and a vast amount of work Federally. Novice Licensing, CB service, WARC79 and preparations for it are a few major items to contemplate.

THE SEVEN YEARS — FUTURE

The future is built on the past — to be trite! Looming ahead for us are the new Radiocommunications Act — and the new Australian Table of Frequency Allocations (see AR March 1981 page 8) neither of which are in the public domain yet. Then there is WCY 83 which we, as amateurs, should take special advantage of to get our hobby more widely known and appreciated by the general public. Not to be overlooked are our 75th anniversary year 1985 and the Bicentenary Celebrations 1988.

Some parts of amateur radio will keep rolling along as they have always done — two way communications around the world being a main drawcard as always. Other parts of amateur radio will expand with new technologies — digital techniques, microprocessors, satellites, ATV, EME, you name it, the amateur will be into it.

The world is a small place, for sure.

Peter B. Dodd, VK3CIF
Past Secretary/Manager

The Radiocommunications Act

Communications and Electronics have progressed dramatically since the Wireless Telegraphy Act was written.

After many attempts to re-write the old Act, there is now every indication that the Bill for the new Act will be 'tabled' in Parliament during the Budget Session (17 Aug. - 25 Nov.).

The Bill will be given its first reading by the Minister for Communications, the Rt. Hon. N.A. BROWN — "The Bill is then open for public comment."

The National EMC Advisory Service would like to remind all Amateurs of the importance of this — "Bill for the New Act" — and the direct effect this new Act could have on the Amateur Radio Service.

The "Bill" is the "Act" in draft form; therefore it can be amended many times, before it becomes an Act ... Copies of the Bill should become available at the Government Printer's Office after the first reading.

Every member of the Amateur Radio Service should, in the interest of the continued well-being of our Service, ensure that he or she is familiar with all aspects of the Bill, which directly or indirectly affect the Amateur Radio Service.

The National EMC Advisory Service is assisting the Federal Executive in setting up a committee to handle the Institute's response to the Bill. The committee has been instructed to take account of opinion from all areas when responding to the Bill.

If, after studying the contents of the Bill, you feel that you have a contribution, or may be in a position to assist the committee with any facet of this important response, please **WRITE** to your Division, or direct to:

CHAIRMAN, CASPAR,
(Communications Act Special Planning and Response)
Committee, P.O. Box 150, Toorak, 3142.

"The Embassy says they are ordering the 'Woodpecker' to stop while you're on the air."

From 73 June '82

QSP

PETER DODD

VK3CIF/VQ4PBD/5H3PBD/GD3PBD/ZL2BDC/YA1PBD/7Q7PBD

Peter Dodd, often referred to as "the voice at the other end of the telephone" — our Federal Secretary/Manager for nearly 12 years retired last month after serving and helping guide the Institute through its, and amateur radio's, period of greatest growth.

Peter was appointed Secretary in time for the 1971 Brisbane Convention and thus ended an era of wholly volunteer labour and no central facilities for the Federal arm of the WIA. The need for paid staff however, was discussed as far back as 1944 when planning for postwar amateur radio was under consideration.

Since the establishment of a Federal Office, responsibilites have mounted. Indeed it is nigh impossible to imagine just how the Institute would survive today without this central nucleus.

The office's administrative functions and reponsibilities have grown with almost every Federal Convention.

In the early stages, a computerised membership record system was developed in 1971 with the help of the VK3 Division which enabled membership subscription notices to be sent out and processed centrally. The responsibility for Magpubs was at that time, also handed over to "the office", then in 1972, Amateur Radio Magazine Production was transferred from the VK3 Division to the Federal body.

From those early days, Peter has seen the amateur population grow from about 6300 to some 15,000 today. He has seen greater involvement in international affairs through our membership of IARU, and of course a number of important international conferences such as Space and WARC '79.

The recent accelerated membership growth due to Novice licencing has taxed the office staff considerably. Now the Australian call book is published annually and we have produced our first WIA Book — of course not all of this work has been done by any one person in isolation. Many Federal office bearers contribute greatly in their own sphere (frequently with the help of the office) — but there is little doubt that Peter Dodd has contributed greatly to all of these activities and many more!

But like so many Federal Officers both paid and volunteer, the general membership knows little of them — they are often just the voice at the other end of the telephone or a signature at the bottom of a letter.

Few recently licensed amateurs realize that Peter is well known in certain amateur circles and has been sought by many an amateur world-wide for Peter, on a number of occasions, has operated from exotic QTHs — he has been rare DX!

QST for January 1959 reports his VQ1 DXpedition — detailing the atmosphere, the trials, the tribulations and successes of his trip to Zanzibar. In later QST's he complained about the bad manners and operating procedures of many operators trying to contact him! — perhaps little has changed.

More recently in Amateur Radio of March 1977 in an article entitle "DX to DX", Peter's overland trip to Australia gives us yet another glimpse of his character. Definitely worth a re-read by anyone with a desire to go mobile or portable in some of the more colourful countries of Europe and Asia.

However, time stands still for nobody and hopefully, Peter in his retirement will now be able to find time to operate on the air and who knows, perhaps he may even be bitten by the DX bug once again!

On behalf of the members of the WIA — and I should also add the many hundreds of non members who, over the years have sought and received help from Peter. Thank you Peter for your efforts. I am sure that Amateur radio in Australia has benefited from your efforts and may your retirement be a happy and healthy one.

Peter Wolfenden, VK3KAU
Federal President WIA
on behalf of the members and others

Peter Dodd Retirement Function — It is anticipated that a farewell dinner will be held during October. If you desire to attend or would like further information, please write to: Federal President, c/- WIA, Box 150, Toorak 3142, Vic.

Competition #4

ANTENNA COMPETITION QUIZ

Pick the nearest correct answer.

1. An isotropic radiator
   (a) operates from off-peak electricity
   (b) is the radiator used at the focal point of a parabolic reflector
   (c) has a gain of 2.1 dB relative to a dipole
   (d) has a loss of 2.1 dB relative to a dipole.
2. The letters DDRR stand for
   (a) Department of Directional Radio Research (Commonwealth Department of Science)
   (b) Donald Duck's Raucous Raspings (Splatter from SSB signal)
   (c) Directional Discontinuity Ring Radiator (Vertically polarised antenna)
   (d) Direct Dipole Radiation Resistance (73.1 ohms in free space)
3. Increasing the height of a VHF antenna more than 3 wavelengths above nearby obstructions
   (a) will improve ground wave signals at distances up to 150 km.
   (b) will make no difference at all
   (c) will cause it to blow down in the next storm
   (d) will improve all signals providing the height is a multiple of a half-wave length.
4. A long wire is
   (a) a telegram of more than 100 words
   (b) a wire antenna more than four wavelengths long
   (c) any wire antenna more than one wavelength long
   (d) any wire antenna where the principal wave angle is inclined to the major axis.
5. Yagi arrays are often considered better than co-linear-broadside arrays of the same gain because
   (a) they provide wider 3 dB gain angles and so are easier to aim.
   (b) they are cheaper to build, lighter and require less space.
   (c) the height above ground is the same for all bird perches.
   (d) the side lobes are always 20 dB lower
6. A ground plane is
   (a) An aircraft prevented from flying
   (b) A flat perfectly conducting surface
   (c) A quarter wavelength radiator
   (d) A vertical antenna with 50 ohms impedance.
7. Dr. Yagi developed a parasitic type end-fire antenna. What was Dr. Yagi's christian name?
   (a) Harry
   (b) Hirosugu
   (c) Hidetsugu
   (d) Stanislowski
8. A folded-dipole is usually used
   (a) to give increased feed resistance compared to a single dipole element
   (b) to fit a long dipole into a suburban block
   (c) to provide multi-band operation in a beam antenna
   (d) by commercial travellers who like to operate as a portable station.
9. A Bazooka is
   (a) a device to repel neighbours complaining of TVI during a contest.
   (b) two parallel driven dipoles in a parasitic array giving wider bandwidth
   (c) a type of multi-band vertical antenna using concentric tubing for quarter-wave chokes
   (d) a quarter-wave length of tubing used for balancing a coaxial feed system.
10. The G5RV is known as a multi-band antenna. This means
    (a) it is not allowed in many countries
    (b) It works on all HF bands if used with an ATU
    (c) It works on all bands and does not need an ATU
    (d) It provides high gain lobes on all DX bands.

The Publications Committee, due to the response of members showing their interest by the forwarding of entries to previous tests of skill have, through the co-operation of Bail Electronics, Australian Agents for Yaesu Musen SSB and FM Equipment been able to offer TWO prizes for participating entrants.

The first neatest correct answers to be drawn at random from entries submitted, by Peter Dodd, VK3CIF, past Manager/Secretary of the Wireless Institute of Australia will win aYAESU RSL435 COLLINEAR ANTENNA for 70cm. This antenna has a gain of 5.6dB and is for pipe mounting. The value of this superb prize is $63.00. This prize will make it a "must" for all VHF enthusiasts to enter this competition.

The second neatest correct answers to be drawn by Peter, will ensure the lucky entrant in the contest pleasureable hours of listening as this prize is a pair of lightweight YAESU HEADPHONES type YH 77 valued at $20.00.

In each case, if the winner does prefer some other article of equipment, a voucher of equal value to the prize will be made available to purchase goods from Bail Electronics.

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COMMUNICATION EQUIPMENT SPECIALISTS
Australian Agents for YAESU MUSEN CO. LTD. (SSB & FM EQUIPMENT)
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P.O. BOX 506
WANGARATTA, VIC. 3677

Voucher

This entitles the winners of A.R Competition No. 4 to the prizes as donated or alternatively if they desire the value of each prize respectively off the purchase of goods or equipment purchased from us.

Yours sincerely,

Stan Roberts VK3BSR.
Managing Director

RULES

The contest is open to all financial members of the WIA with the exception of all people and their immediate families associated with the production of Amateur Radio. ONE entry per member (all multiple entries will be disqualified prior to drawing), each entry to be handwritten on the back of a standard Australia Post approved small envelope. (ie: 1 (a) 2 (a) 3 (c) etc).

Entries must be received no later than the last mail on the 1st. December 1982.

The Editor's decision will be final and no correspondence will be entered into regarding the competition. The winners and the correct answers will be published in January 1983 AR.

All entries to AR Competition No. 4, Box 150, Toorak, Victoria, 3142. On the back of the envelope your name, address, call sign and the answers to the problems.

Only entries in the above format will be accepted. All others will be disqualified.

Well, it's one way to get a royal welcome! Cheeky pilot Australian Dick Smith dropped in at Balmoral during his round-the-world helicopter trip, and chatted to another helicopter enthusiast — Prince Charles.

Dick, 38, said he had to buy a road map to find Balmoral, and when he turned up he had a toy helicopter with him as a present for Prince William.

Prince Charles seemed to enjoy the whole occasion He wore a kilt — his traditional outfit when holidaying in Scotland — and looked at the visiting helicopter with interest.

Dropping in at Balmoral and landing on the front lawn.

Dick, VK2DIK, has completed the first phase of his Around the World Helicopter exploit by landing on the floating London Heliport in the Thames on 20th August.

This first leg, although the shortest and first part of the trip, was anticipated as being the most gruelling due to the difficult weather conditions and remoteness of the area, was on schedule even though initial problems with malfunctioning avionics caused concern. Although Dick's route across Greenland was altered due to advice from the US Air Force who described it as bordering on suicidal to attempt to cross the barren and central plateau of Greenland and it would be preferable to follow the southern coast of this barren land, he was on schedule at Balmoral Castle where Dick was met by Prince Charles who is also a keen helicopter enthusiast.

The trip was described by Dick as being very loney and cold and it was not known until his landing at Balmoral that he could have been the target for some marksman enroute. Two holes, apparently made by bullets, were found after landing. One hole was through the helicopters window and the other through the top of the fuel tank. Dick was not aware and nor does he know where he picked up this extra freight.

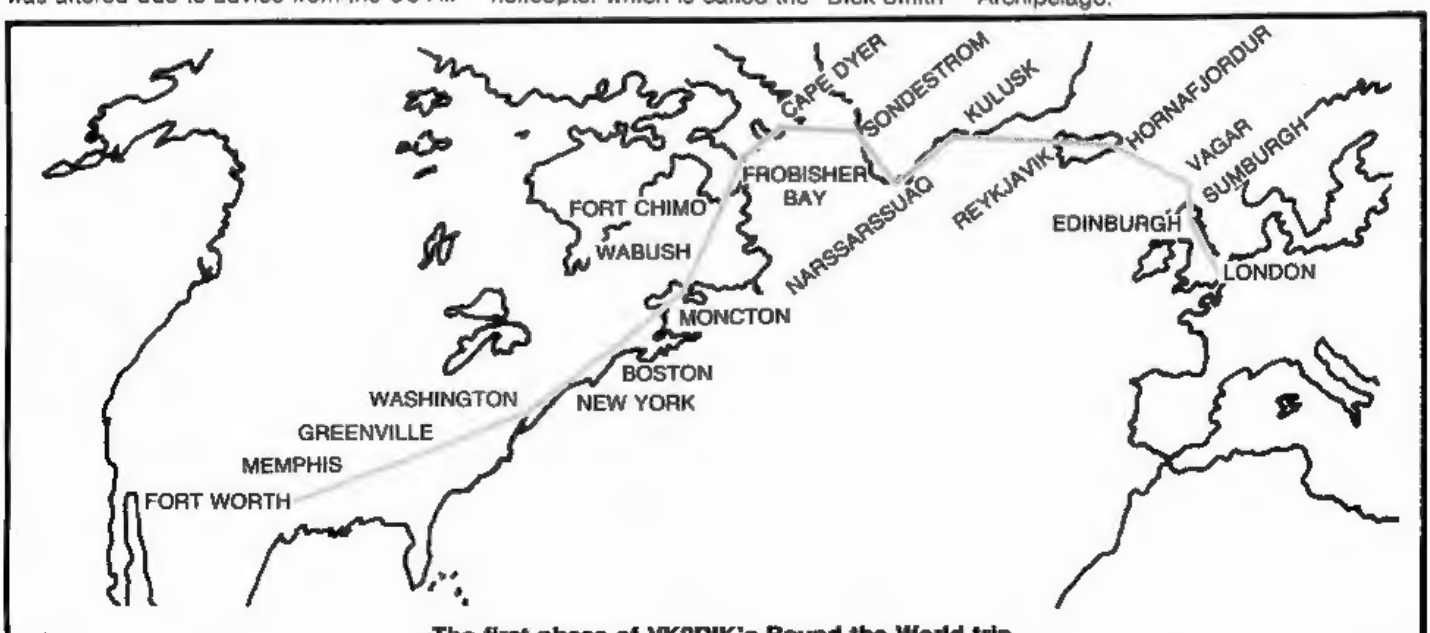
For the aeronautically minded reader, the helicopter is a Bell Model 206 Jetranger III, which is equipped with the most up to date navigation instrumentation available including equipment capable of using the VLF Omega system which allows precise navigation to any point of the globe. This helicopter which is called the "Dick Smith Australian Explorer" is powered by a single Allison 250-C20 gas turbine engine capable of developing 420 horse power and has been modified for and fitted with extra long range fuel tanks.

The second stage of the trip, which will be commenced after a break in England, will be back to VK through such well known cities as Rome, Muscat, Katmandu, Calcutta, Bangkok, Djarkata, and then on to Darwin. The route will then be to Katherine, Mount Isa, Charleville and on to Sydney. This leg of the trip comprises some 22,000 kilometres and means a period of some 100 hours in the air.

At the time of going to print Dick had nearly reached the half-way mark of the second stage of his Around the World Helicopter adventure.

Again unforeseen happenings caused flight plan diversions and quick calculations of fuel reserves.

The longest stretch of stage two lay ahead as there are three planned flights of just under five hours which are over 13,667 islands which comprise the Indonesian Archipelago.



The first phase of VK2DIK's Round the World trip.

THE YAESU FT-102 ALL MODE HF TRANSCEIVER

The new Yaesu FT-102 transceiver has been designed to replace the FT101Z/ZD series transceivers.

EQUIPMENT REVIEW

Ron Fisher, VK30M
3 Fairview Ave., Glen Waverley 3150

The Yaesu FT-102 all mode HF transceiver has been produced to replace the FT-101Z/ZD series. After more years than most new amateurs can remember, the 101 has disappeared from the Yaesu catalogue. In addition to this, Stan Roberts of BAIL ELECTRONICS tells me that Yaesu also intends to drop the FT-107 but to continue producing the FT-902. As the new 102 has tube finals, this means that Yaesu have solid state final transceivers at the top and bottom of their range, the FT-ONE and FT-707, and two tube final rigs in the middle. Not only has the FT-102 a tube final, it also uses three tubes in parallel, but more on this later.

First impression of the 102 on unpacking is extremely favourable. The overall appearance is most impressive and the finish faultless. I have always been of the opinion that appearance sells more amateur transceivers than all the technical features put together. On this reasoning the FT-102 should be a winner, but to add to the appeal it has all the technical features that the most scrupulous operator would require.

THE FT-102 TECHNICAL FEATURES.

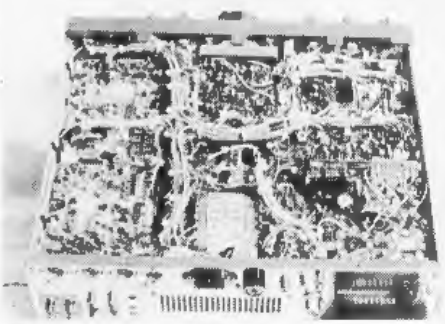
Firstly lets look at the physical differences between the 102 and the 101Z series that it replaces. The 102 has a long low look. At 368mm it is 23mm wider than the 101Z and at the same time it is only 129mm high or 28mm lower. Depth of the 102 is 17mm less and the overall weight at 15kg is the same. The two side by side panel meters emphasize the long low appearance. The dual meter set up is perhaps derived from the FT-ONE and certainly a great idea. To my knowledge the only other transceivers to feature dual metering were the old Drake TR-4 series.

It seems that Yaesu have designed the 102 with several factors in mind. The first and to my mind the most important is an exceptionally clean transmitted signal. The purpose of the three 6146's in the final is not to produce 50% more output than the two 6146 transceivers, but to give about the same power with lower intermodulation distortion.

Intermodulation distortion is perhaps better known as splatter which is often a problem from strong local signals with you trying to copy a weaker signal say 10kHz up the band. In the past a typical figure claimed by amateur equipment manufacturers was -31dB for third order distortion, although the basis for this figure was usually not quoted. The new FT-102 claims better than -40dB at an output of 100W PEP. Tune up instructions tell how this may be achieved, although quite a bit more power can be obtained as we shall later see. The second design factor is to produce a clean received signal with a high immunity to front end overload and a wide dynamic range. A choice of several optional filters for CW and AM reception combined with a shift/width control and peak/notch filter complete a most comprehensive picture.

The FT-102 is an amateur band transceiver only and does not include a general coverage receive facility. In fact it could possibly be described as a conventional design if we consider how far conventional has come over the last few years. A standard VFO is used as the basis of the tuning system and not a synthesizer as in the FT-ONE. The transceiver is powered from AC mains only, with no provision for 12V DC operation.

Some of the small operating aids included in the 102, not already mentioned, are as follows: Treble and bass tone controls for the transmit audio to improve quality for those of us who don't have a DX voice. Top cut tone control for receive audio. Transmit audio monitor to check response balance when adjusting microphone tone controls and speech processor. This feature is also handy when replaying taped transmissions of other stations.

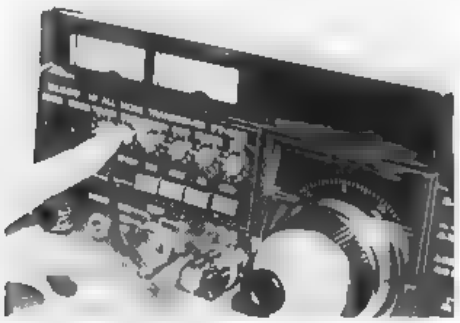


Under chassis view — the optional AM/FM unit is installed behind tuning knob.

An optional feature on the 102 is an AM/FM board which allows transmission and reception of narrow band FM and transmission of Double Sideband AM. A

front panel squelch control is a standard feature on the 102, but of course only operates when the optional FM board is added

The list of optional filters includes a narrow SSB with 1.8kHz band-pass Four filters for CW give band widths of 600, 500, 300 and 270Hz.



The six pre-set controls pop out with light finger pressure for easy adjustment.

THE FT-102 ON THE AIR.

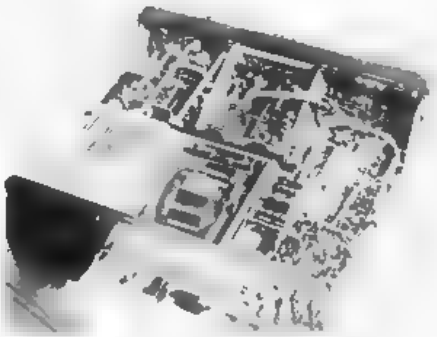
I must admit that this is the part of checking out new gear that I most enjoy The 102 impresses right from the start. The knobs and controls have the right feel about them, they are well spaced out and all of the rear controls of the concentric pairs have levers extend ng from them for one finger operation. The six preset controls however take the prize for ingenuity. When not required for use they sit flush with the front panel. A light touch with your finger tip releases them and they pop out about 15mm, for easy use. When they are not required anymore push in and they lock back into place Very neat!!

Rear panel — all connectors are easily accessible.

Getting the FT-102 operating is a quick and simple procedure The AC power connector s one of the new three pin appliance plugs. These are very much more satisfactory than the old practise of using multi-pin, Jones type connectors

Initial impression on switch on is excellent. The meters are brightly and clearly illuminated, the digital display is large and bright. The tuning knob has a firm but smooth feel and rotates at 18kHz per turn.

Flipp ng the mode switch through its various functions illuminates the excellent mode indicator next to the digital display. These are a series of small LED displays that show USB, LSB, CW-W, CW-N, AM or FM. Receive audio sounded clean and even with the built-in speaker it was of good quality. The action of the shift/width control was a little difficult to sort out (I should have read the instruction book first) but once mastered worked fairly well In actual fact I don't think it worked as well as the shift/width function on the FT-ONE. See the test section of this report for further comment.



Top cover removed. Digital display unit top [illegible].

For those of us used to valve output transmitters, tune up is quick and easy however again it pays to read Yaesu's recommendations for maximum plate current if you want to maintain a clean signal. A unique facility on the 102 is the ALC 'peak hold'. By depressing the appropriate button the ALC meter will hold up at its peak reading for about one second. This then gives a very clear indication of any over-drive condition, which is particularly important when the processor is in use. It was also noticed that correct loading of the final is important as it is possible to get spurious output on some bands with light loading.The speech processor works well and by setting the second meter at 'COMP', both compression and ALC can be monitored simultaneously. Quality reports using a Yaesu MH-1 B8 microphone were excellent.

NOISE BLANKER

With things like the infamous Woodpecker around, noise blanker operation has become an important facility to many amateurs who believed they didn't need one. In short the FT-102 blanker is just not up to the job of stopping the Russian menace. With the blanker control well advanced, it is possible to get a two or three 'S' point reduction, but at the same time the distortion produced on the wanted signal takes the readability back to where it was before.

In contrast, blanker action on noises found around the home environment was excellent. With just a touch of blanker gain, most electrical hash disappeared and no discernable cross-modulation was produced

ACCESSORIES FOR THE FT-102.

With the release of the 102, Yaesu have also released a full range of matching accessories. Several microphones are available including both desk and hand-held types. Some of these have scan buttons for use with the optional external scanning VFO type FV-102DM. The matching antenna coupler FC-102 has the capability of handling the output of the FL-2100Z linear. It also incorporates a watt meter with 20/200 and 1200 watt scales plus a peak hold feature to enable peak power readings.

Two external speakers are offered both having built in audio filters and one with a phone-patch coupler

None of these accessories apart from a hand-held microphone were supplied for test with the FT-102.

THE FT-102 ON TEST

The following equipment was used to produce the figures that are quoted Drake W4 watt meter Heath SB610 monitor-scope. Daven audio power output meter AWA F242A noise and distortion meter AWA G230A low distortion audio oscillator

FREQUENCY STABILITY

As the FT-102 uses a PLL system, stability checked at one point will be the same as for any other The VNG standard on 7.5MHz was used From a cold start at 20°C the transceiver shifted 300 Hz over the first 20 minutes, the next ten minutes it drifted a further 100Hz and over the next one hour a further 300 Hz. While drift of this amount would go unnoticed in normal operation and is infact within the specifications, it is more than one would expect from a state of the art transceiver.

POWER OUTPUT

Power output was measured with full drive under CW conditions. The transmitter will operate on all bands including the new WARC bands

1.8 150 watts	18.0 125 watts
3.5 170 watts	21.0 115 watts
7.0 160 watts	24.5 110 watts
10.1 135 watts	28.0 110 watts
14.0 135 watts.	

PEP output as checked on the monitor scope was essentially the same with an excellent pattern. It was also noted that power output on SSB as indicated on the power meter (not peak reading) was higher than many other transceivers for the same peak output. Many comments from stations worked also indicated excellent talk power in relation to signal strength

RECEIVER TESTS.

Receiver residual noise -62dBm An excellent figure, you won't be worried w th hum or hiss in your headphones.

The receiver output was terminated in 8 ohms. Maximum output 2.25 W at about 20% distortion At 1.5W distortion was 5% and at 1 W it had dropped to 2.5%. Audio distortion did not decrease below 2.5% at lower output levels and it is suspected that most of the distortion was being produced in the product detector The audio for this test was a 1 kHz tone produced by using the crystal calibrator

The receiver tone control fully operational reduced a 3 kHz beat note by 10dB and a 2kHz beat note by 7dB Lower frequenc es were unaffected On a listen ng test the tone control was quite useful and certainly took the edge off noise and interference.

Both the notch and peak filters worked well. A heterodyne of any audible frequency could be reduced from an indicated S9 to S0 on the meter. The peak contro only operates when in the CW mode and even with the SSB filter was able to give a single signal effect. No doubt with the optional CW filters installed, quality of CW reception would be of a high order.

EVALUATION AND ON AIR TEST OF YAESU FT-102

Serial No 2G010576

CATEGORY	RATING	COMMENTS
APPEARANCE		
Packaging	****	*Transceiver plastic wrapped. Foam inserts in double carton.*
Size	****	*Similar volume & same weight as previous model.*
Weight	****	*As above*
External Finish	*****	*Clean styling. Excellent quality knobs and fittings*
Construction Quality	****	*Very well put together*
FRONT PANEL		
Location of controls	****	*All very accessible. No crowding.*
Size of knobs	*****	*Best seen for some time. All concentric controls have levers.*
Labelling	****	*Very clear labelling on all controls.*
Meter	*****	*Two meters, both clear and well illuminated*
VFO knob action	****	*Smooth action*
Dial readout		
Analogue	****	*1 kHz readout. Clearly illuminated*
Digital	****	*Bright, fairly large Spot on accuracy*
Status Indicators	****	*Operating mode indication.LED on/off indicators for other functions.*
REAR PANEL	****	*All connectors easy to get to and wide range of facilities.*
RECEIVER OPERATION		
VFO stability	**	*See test section of text*
Digital dial accuracy	****	*Within ± 50 Hz at all times*
Analogue dial accuracy	***	*Within 1.5kHz over 500kHz*
Memories	*NA*	*No memory facility included.*
Sensitivity	****	*Listening and comparitive tests show high sensitivity.*
RF attenuator	***	*RF amp. switchable to improve dynamic range.*
Selectivity	****	*Standard SSB filter v.good plus wide range of opt. filters.*
Shift/width	**	*See test section of text.*
Notch filter	****	*Produces deep null*
Peak filter	****	*Tunable to give sharp peak at any required beat note.*
Spurious responses	****	*Only audible with antenna off.*
'S' meter	****	*Smooth action. Realistic response.*
AGC performance	****	*Smooth action. No pumping or distortion*
Signal handling	****	*No trace of overload found at any time.*
Clarifier	***	*Selectable for transmit, receiver or both.*
NOISE BLANKER		
Line noise	****	*Coped well with most types of domestic noise.*
Auto ignition	****	*Most effective*
Woodpecker	**	*Some reduction in level of certain types of pulses*
Effect on signal	***	*OK so long as blanking control not advanced too much.*
QUALITY OF RECEIVED AUDIO		
Internal speaker	***	*Better than average for built in speakers.*
External speaker	*NA*	*Available as option. Not available for test*
Headphone output	****	*Matched into standard stereo phones very well. Low internal hum & noise produced very comfortable listening.*
Cooling fan noise	**	*A little higher than expected*
Tone control	***	*A very handy addition*
TRANSMIT OPERATION		
CW & PEP output		*See test section of text*
Audio response	*****	*Adjust mic. tone controls to suit all situations.*
Audio sensitivity	****	*Plenty of gain available*
ALC action	****	*No flat topping observed on scope even when driven hard*
Compressor	****	*Effective and easy to set up and monitor*
Metering	*****	*ALC monitoring at all times plus either of HV, IC, PO & comp.level.*
Relay noise	****	*Unobtrusive*
VOX operation	****	*Smooth. Control setting did not drift.Gain & delay controls on front panel.*
Cooling	****	*Three final tubes ran cool at all times.*

RATING CODE

*Poor * Satisfactory ** Good *** Very Good **** Excellent *****

★ Our review transceiver was from BAIL ELECTRONICS of 38 Faithful Street, Wangaratta, Victoria, to whom all enquiries should be directed

TRANSMIT MICROPHONE TONE CONTROLS

By using the FT 102's monitor system we were able to measure the effect of these controls. It was checked at 300Hz where the response could be reduced to 15dB. At 3kHz the output was reduced to -6dB. In on air use it was found that the action of the bass control produced the greatest effect, particularly when a fair degree of processing was used. Perhaps the only control missing on the 102 is a bypass switch to revert to flat transmit audio response from the front panel.

Unfortunately an RF generator was not available at the time these tests were conducted. We were unable to measure the actual receive sensitivity or dynamic range. However side by side comparison was made with a receiver that had previously been checked as having a dynamic range of 86dB. All tests indicated that the 102 was at least equal to this and there was no reason to doubt the published specification of 90dB or better.

The internal speaker is mounted in to the top cover of the receiver. It is a 10cm diameter unit and produced quite acceptable quality with no rattles or vibrations even at high audio levels.

The action of the shift/width control did not seem as effective as the one recently checked on the FT-ONE. The band width could not be reduced lower than a top cut off of 1.8kHz. With the normal SSB filter this did give a worthwhile increase in selectivity but did not approach the 500Hz as specified.

INSTRUCTION BOOK

I have always given Yaesu top marks for their instruction books and this one is no exception. It is in fact not one but two volumes, the second being a sixteen page parts list. The fifty six pages of the main book are crammed with information. Sections include: ***General description, specifications, description of front and rear panel controls, switches and connectors, interconnection of the FT-102 with ancillary gear, transceiver installation and microphone information, transceiver operation including use of shift/width controls, circuit description of the receiver section, transmitter section and common circuits.*** This section is very well written and contains essential information for the new owner.

Seven pages are devoted to maintenance and alignment with clear photographs showing all points of adjustment. Circuits cover several pages plus two large lift outs. Perhaps the only thing not provided are circuit board layouts. In addition to all of this, I hear that a full scale workshop manual will soon be available as an optional extra.

CONCLUSION

There is not doubt that the FT 102 has a lot to offer the keen operator who does not require a general coverage receive facility (and many of us don't). As long as you take careful note of the tune-up facilities, the clean transmitted signal will keep you on friendly terms with your close amateur friends. all the transceiver controls have the feel of excellent engineering and most functions operate as they should. The FT 102 is highly recommended.

ZEDD EXPLAINS MEANING OF LIFE TO THE BOYS

Some of the boys were sitting around the club shack the other day, warming their feet on the power supply for the TS-120 and talking about late wintry bluster and how it would likely affect DX come summer, when WHANG! (not to be confused with Wang, the computer people), the door flies open, and into the shack with a few late snowflakes and some of last year's Johnson grass comes the great Q.R. Zedd himself.

"Howdy, boys," says Zedd, turning down the volume on the TR7 he has attached to his Elton John tee shirt with velcro tape, "how's DX?"

Well, at that, naturally nobody said a word, because having the great Q.R. Zedd ask you how DX is, is a little like having Bill Banowski ask you if you have any good ideas for raising money. W5MCN sort of looked off in the general direction of the 2-metre rig, and W5SQJ got so flustered he spat his Juicy Fruit instead of his chewing tobacco into his plastic cup, but other than that there was silence and obvious deep respect. WA5MLT, joining club members for his semi-annual visit, cleared his throat. WA5RPP, intrepid club reporter, leaped to his Big Chief tablet, N5DWN opened her portable filing cabinet to get out her latest 312QSL cards. But no one spoke.

Suddenly and without warning, Zedd, pricking his ears, leaped to the club 120, advanced the AF gain, and thumbed the keyer. A burst of CW at about 80 WPM boiled into the ether. Zedd listened to what sounded like QRN and possibly a berserk Cuisinart to the rest of us, nodded, sent a couple of R's, a 73, an SK and his callsign, and leaned back from the rig.

"My pal Rhandi in VU-land," Zedd explained. "I waited to make sure no one else in the room wanted to work him, but I didn't want him calling CQ indefinitely. I hope nobody minds."

"No one else heard him," said AF5X, "except the two real CW operators on the premises, Q.R. — you and me."

"Well," said Zedd modestly, stuffing shag tobacco and shredded DXCC stickers into his ancient clay pipe, "that only illustrates what I have often tried to tell novice DXers — you know, guys with fewer than 350 countries. Half of working the rarer ones is in good listening. Listen, listen, listen! And don't talk so dadblamed much. If I have said it once I have said it a thousand times, you shouldn't talk all the time, you should listen. Even if you are not going for DX but only engaging in casual conversation, in my opinion it is only good manners to keep your mouth shut and your ears open. Remember the old saying, little pitchers have big ears, and that goes for the great ones like Johnny Said, too. Silence is golden. You show me a man who talks too much and I will show you a loser. It's like I was telling Tondelayo the other evening, any fool can get in there and talk a person's leg off, but it is a mark of greatness to be succinct and still make the contacts. Are there any questions so far?"

"Q.R.," said W5OU, who had just arrived, "I think all of us would truly appreciate it if you would tell us what you think lies ahead for amateur radio."

"Yes," said KC5CU, "and while you are at it, if you could tell us the meaning of life, some of us younger boys would sincerely appreciate that, too."

"What I think lies ahead for amateur radio is a decline in the sunspot cycle and a rise in the cost of equipment," Zedd said briskly. "As to the meaning of life, I will tell you a little story that I think illustrates my view on this matter."

"It was in 1969, I think," Zedd resumed, "when I made my one-man Dx-pedition to Africa, that I learned the meaning of life. I landed in Kenya about 2 a.m. on a beastly hot day, don't you know, and immediately began setting up my tent, antenna farm, and so on, working single-handed except for the meagre help offered by 29 native beaters, three technicians from RCA and the crew I had hired from the Yasme Foundation. Well, as you can imagine, we were all pretty tired by the time we were ready to start operating, about four hours later, and everyone went off to bed except me. I jumped right onto seventy-five and gave my name a couple of times, along with my call, and got a right nice pileup going.

"I was working 'em right along just as dawn came, and I heard a small sound beside me. Yelling for everybody to QRX (which is DXer's lingo for 'Everybody else shut up and let the 4s call incessantly by themselves for a while'), I turned and stared straight into the eyes of a huge male lion. At about the same time, he let out a blood-curdling roar, showed me about 300 sharp teeth, and enveloped me in the nastiest cast of zebra-breath it has ever been my misfortune to encounter.

"Obviously Mr. Lion was hungry, and obviously he figured I was going to be his next meal. I had to think fast. So what I did was shove the microphone into his face.

"Well, boys, you may not believe it, but Mr. Lion took one look at the microphone, let out another terrible shriek, and turned and ran out of there just as fast as he could go.

"And we never saw him again."

"Just about the worst case of mike fright I ever saw for myself."

Zedd sighed and puffed his latakia. "Which led me to the insight I have since carried close to my heart about the meaning of life for any DXer. And that is this. When in doubt, grab for the mike, and never be concerned about lion."

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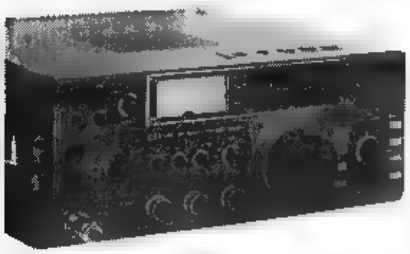

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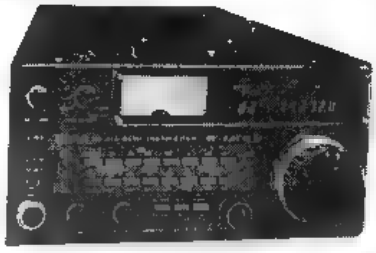

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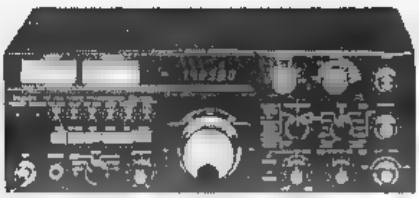

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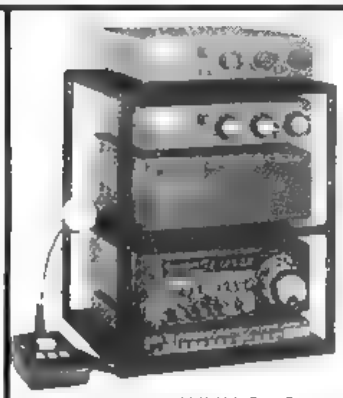

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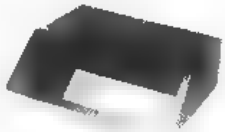

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Re-broadcasts — 3.605 MHz on Mondays at 19:30 hours and 20m RTTY at 20:00 hours
General Meetings — Third Friday of each month at 19:30 hours.

SOUTH AUSTRALIA:
President — Mr. W M (Bill) Wardrop, VK5AWM.
Secretary — Mr. David M. Clegg, VK5AMK
Broadcasts — 1.850, 3.550, 7.095, 14.175, 21.195, 28.470, 53.1 MHz.
Repeater Channel 7000 at 09:00 hours.
General Meeting — Fourth Tuesday of each month at 19:30 hours.

WESTERN AUSTRALIA:
President — Mr. Bruce Hedland-Thomas, VK6OO.
Secretary — Mr Fred Parsonage, VK6PF
Broadcasts — 3.560 7.050, 14.100, 14.175, 28.470, 53.1 MHz. 2 metres. Channel 2 Perth, Channel 2 Wagin at 09:30 hours.
General Meetings — Third Tuesday of each month

TASMANIA:
President — Mr Lloyd Cherry, VK7BF
Secretary — Mr Peter Clark, VK7PC
Broadcasts — 7.130 MHz SSB with relays on 6 and 2 metres Channel 2 (south), Channel 8 (north), Channel 3 (north-west), at 09.30 hours.

NORTHERN TERRITORY:
President — Mr Terry A. Hine, VK8NTA
Vice-President — Mr Barry Burns, VK8DI.
Secretary — Mr Robert Milliken, VK8NRM
Broadcasts — Relay of VK5WI on 3.555 MHz, and on 146.5 MHz at 09.30 hours Slow morse transmission by VK8HA on 3.555 MHz at 10:00 hours almost every day

POSTAL INFORMATION.
VK1 P O Box 46 Canberra, 2600 Phone (062) 41 3889.
VK2 - P O Box 1066, Parramatta, 2150. 109 Wigram Street, Parramatta Phone (02) 689 2417
VK3 412 Brunswick Street, Fitzroy, 3065. Phone (03) 417 3535 from 10:00 to 15:00 hours weekdays.
VK4 G P O Box 638 Brisbane, 4001 Phone (07) 349 7768.
VK5 — G P O Box 1234, Adelaide, 5001. West Thebarton Road, Thebarton Phone (08) 352 3428
VK6 G P O Box 10, West Perth, 6005
VK7 P.O. Box 1010, Launceston, 7250.
VK8 (included with VK5). Darwin Amateur Radio Club, P O Box 37317, Winnellie, Northern Territory, 5789.

SLOW MORSE TRANSMISSIONS:
Most week day evenings from about 09:30 UTC onwards around 3.550 MHz.

VK QSL BUREAUX:
The following official list of VK QSL Bureaux are all inwards and outwards unless otherwise stated
VK1 — QSL Officer, G.P.O Box 46, Canberra, A.C.T. 2600
VK2 QSL Bureau, P.O. Box 73, Teralba, N.S.W. 2284
VK3 Inwards QSL Bureau, Mrs Barbara Gray, VK3BYK, 1 Amery Street, Ashburton, Vic 3147.
VK3 — Outwards QSL Bureau, Mr Des Clark, VK3DES, C/o VK3 Rooms.
VK4 — QSL Officer, G.P.O Box 638, Brisbane, Qld 4001
VK5 — QSL Bureau, Mr. Ray Dobson, VK5DI, 16 Howden Road, Fulham, S.A. 5024.
VK6 — QSL Bureau, Mr. Jim Rumble, VK6RU, G.P.O Box F319, Perth, W.A. 6001
VK7 — QSL Bureau, G.P.O. Box 371D, Hobart, Tas. 7001
VK8 — QSL Bureau, C/- VK8HA, P.O. Box 1418, Darwin, N.T. 5794
VK9 & 0 — Federal QSL Bureau, Mr. Neil Penfold, VK6NE, 388 Huntriss Road, Woodlands, W.A. 6018

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VK6 Mr Bruce Hedland-Thomas, VK6OO
VK7 — Mr. Ivan Ling, VK7XL.

MESSERGELANDE 1982

Peter Handley-Brown, VK4PJ
16 Bede St. Balmora. 4171

Harro, DJ6RB/VK2DKD, the VK specialist, told me that this gathering was equalling the Dayton Convention in USA and after seeing it I would support this statement

This year's Convent on was, as for many years held at Fr edrichaven on the German Bank of the Bodensee which I would call Lake Constance

WHY AT THE EXTREME SOUTH OF GERMANY?

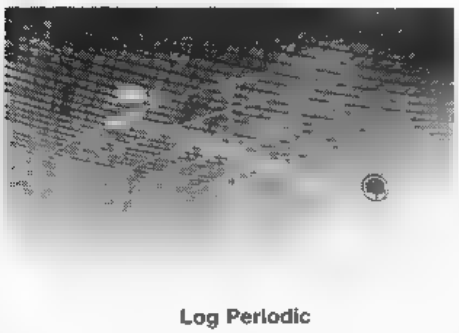
After WW I the Conventions, Deutchland Treffen, were sponsored by Volkswagen, at their home town of Wolfsburg, for many years. At the same time the revival of a pre-war gathering Unoff c al and personal, was he d on a sma is and Reichnau, on Lake Constance, for some 12 years until accommodat on became a prob em and a move was made to Constance about 1962 Volkswagen sponsorship had lapsed and the 1962 Convent on was called the International Bodensee Treffen with some 2000 persons attending

General view of half the hall.

In 1976 the move was made to Friedr chaven under the banner of HAM RADIO 1976, also The Internat onal Amateur Convent on' At this time the socia side of the convention was held on two ships in the harbour with a f reworks display

In 1972 a convention held at Wolfsberg near the centre of Germany was not successful

The increas ng popu arity of Friedrichaven on the border areas of several countries may be attributed to the desire of Germans to holiday in the southern border areas in summer and to have a greater dealer activity there



Log Periodic

The present site is a big convention area with two adjacent main buildings and a more remote concert hall. One of the two main buildings, the larger, housed the commercial part and you may note that there was ample headroom to erect towers with TH6 size and larger log periodic beams.

There were vast parking areas, which appeared to be filled, and all lawns and open spaces were occupied with everything from pup tents to luxury caravans by those "living in".

Entry fees were a little over our 3 dollars for 3 days or just under 2 dollars for one day . 9 am to 6 pm. Groups of 20 were given concessions

DARC had many stands and together with one hundred commercial organisations filled the hall and overflowed outside Rather than comment on equipment which generally should be available in Australia at a better price I will comment on stands Two of the three best known Japanese manufacturers had at least three Japanese on their stall and I was told that they really knew their homework as distinct from other local reps

Distinctive yellow brochure bags, as well as "T" shirts, gave one brand good publicity

DARC had a big stand relating to Education of which they place much importance and there I found the best of the English speakers. YLs and XYLs were catered for adjacent to an information stand which was of little value to us because of language problems

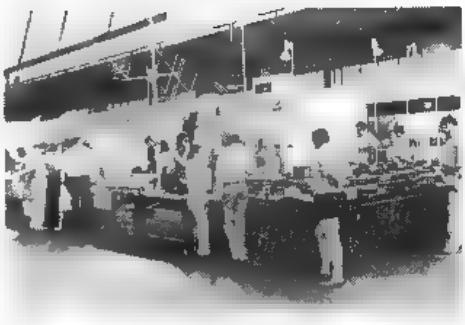
Great emphasis was placed on retaining the interest of SWLs and not only was their group represented but a modern morse tutor was available. Bundepost issues a license after SWLs pass a test on procedures and regulations.

Satellite group, Certificate Hunters, QSL, Novice all had DARC stands

Amateur TV, AGAF, which seemed to have an American background had a comparatively large, and well set up stand but relatively low interest. Similarly the DARC Amsat stand was very quiet. Two commercial firms dealt with weather satellites as apparently private plane operators, etc. like first hand weather information One of these firms headed by Terry Bitten, an Englishman, located at Baiersdorf, north of Numberg, is well known to subscribers of the"VHF" quarterly magazine A staff of six were busy on this stand.

The German Bundepost, (Post Office) had a large stand with equipment to test morse speeds and I was told was issuing guest licenses to border nationals on the spot.

European products were predominently in the VHF, UHF line, antennas, pre-amps, PAs, and adjucts to brand units Handheld VHF, UHF units were commonplace



VHF Stand.

Generally speak ng there was a greater range of equ pment than I would expect to see in Australia but we do not miss much There were quite a few stands mak ng up callsign tags. "T" shirts etc and do ng very big business

One stall of partic ular interest conta ned some dozen computers" all be ng operated by enthusiasts and I will be surprised f that firm does not do we

Dealers sel ng whatever you can imag ne in the radio line made up the bulk of the stands, about 100 in all One tem outs de the main hall was a 25 metre extensible hydraulic mast on trailer which 'travels the world"

Up until now I thought that I had seen the show until I moved into the second ha where amateurs sold the r surplus equipment. This was an amaz ng sight a huge hall crammed to capacity with amateurs and their surplus equipment there must have been 400 tables w th OMs and XYLs in attendance ... a seething mass

Apparently one pays about four Austral an dollars for space, if you can find any and away you go sell ng You name the tem and it was there somewhere. I wondered how a l this equipment, apart from the main hall could be got away from the s te a ma,or exercise

During the weekend there were 2 metre 70 cm and 80 metre mobi e contests foxhunts and incoming and homegoing contests. There was a well set-up meet ng ha where, when I looked n, 25 C ubs were deliberating on their problems

The site was complete w th plenty of restaurant and food stalls manned kindergarten, ambu ance station, where an OM was being treated, and a Post Office

During the Saturday that I visited the temperature was wel over 30°C. and dress ranged from that of Surfers Paradise to Port Philip. That night was the b g soc a night but I unfortunate y had to return to Zur ch

Thanks to Harro DJ6RB/VK2DKD for his help with h storica deta s

The attendance would be between ten and twelve thousand which makes it qu te a big show

144 MHz Propagation Darwin - Japan

Graham Baker, VK8GB
74 Byrne Circuit, Moil, NT. 5792

Propagation of 144 MHz amateur signals over the path between Darwin and Southern Japan has been observed for some years now. This paper summarizes results and provides statistical details of contacts made.

HISTORY

Propagation experiments between Darwin and Southern Japan were conducted by Government organizations on various frequencies up to 102 MHz in the 1960's and 70's. These proved that VHF propagation existed regularly on the path and it was suggested by Roger Harrison in his series of articles on trans-equatorial propagation that it was probable that communications could be established at 144 MHz.

When reports of amateur signals being heard over similar paths in South/Central America on Oscar uplink frequencies appeared in 1977 I began to watch 144 MHz regularly.

The first observation of JA/VK propagation on 144 MHz was on 27 October 1977. Following this regular schedules with stations in Southern Japan were set up and on 24 February 1978 two way contact was established with JH6TEW.

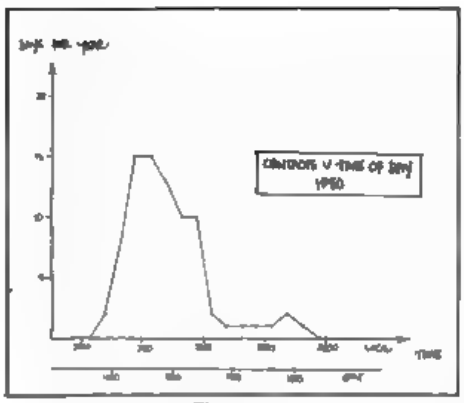


Figure 2

DAILY OCCURRENCE TIMES

The times at which signals propagate between Darwin and Japan are in the mid to late evening.

The graph at Figure 2 shows the local time against the number of days contacts were made in the particular quarter hour for the year 1980. A total of 273 contacts were made in 27 days during the year.

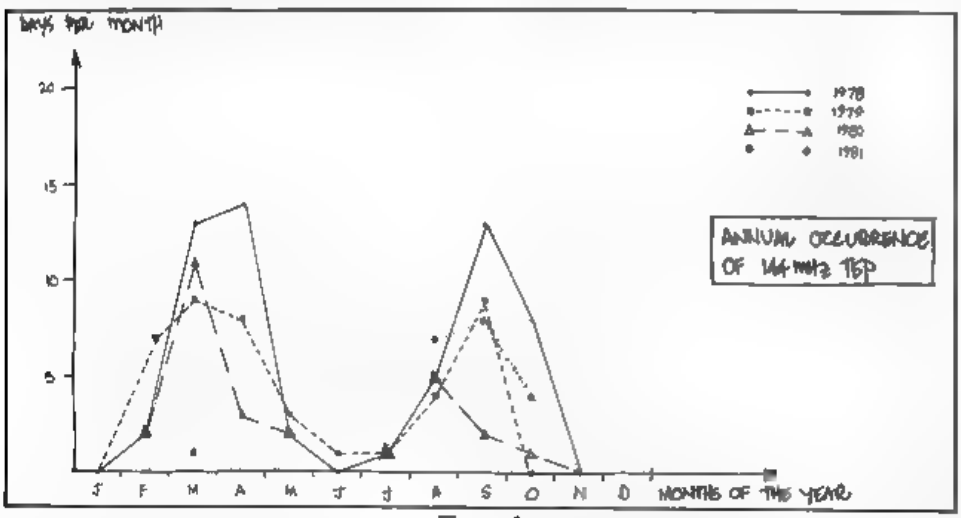


Figure 1

ANNUAL VARIATIONS

The occurrence of propagation on the 144 MHz path Darwin to Southern Japan peaks around the equinoxes. Figure 1 shows openings in days per month for the years 1978 to 1981.

Contacts totalling 1184 were made with stations in Southern Japan during the four year period.

The peak occurrence rate at March and September of each year can be clearly

VARIATIONS IN SIGNAL STRENGTH

Signal levels rise very sharply at the beginning of an opening and fall slowly thereafter.

The graph at Figure 3 plots signal reports received against time for the best opening experienced. This occurred on 29 March 1980 when contacts were established with 73 different stations between 1113 and

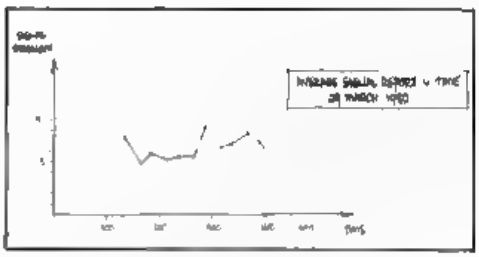


Figure 3

1403 UTC.

The numerical average of the signal report received averaged over each quarter hour is plotted against time.

On this night 6 reports of 59^{+} and 8 reports of 59 were received.

EQUIPMENT USED

The equipment at VK8GB was a Yaesu FT101E + FTV250 running about 15W to a Hy gain 214 14 element yagi.

The equipment used by Japanese amateurs was invariably a low power multimode transceiver but the antennas varied from ground planes to 8 x 11 el yagi arrays.

GEOGRAPHIC SPREAD OF SIGNALS RECEIVED

Contacts established with amateur stations in Japan on 144 MHz were limited to Western Japan in the following prefectures.

Hyogo	Kagawa	Nagasaki
Okayama	Ehime	Kumamoto
Shimane	Kochi	Oita
Yamaguchi	Fukuoka	Miyazaki
Hiroshima	Saga	Kagoshima

These are shown in Figure 4

Because of the high density of amateur stations in Japan the eastern limit is very well defined. Repeated attempts to establish contact with stations in Korea and Guam were unsuccessful and no stations in Japan further south than the bottom of Kyushu Island have been heard.

RELATIONSHIP TO THE GEOMAGNETIC EQUATOR

The relationship of Darwin to the areas to which 144 MHz propagation has been established in Japan are shown in relation to the Geomagnetic equator in Figure 5

The relationship of equidistance and perpendicular crossing are easily seen

DISCUSSION OF STATISTICAL BASE

The statistical base for the graphs produced is my own log book. This produces

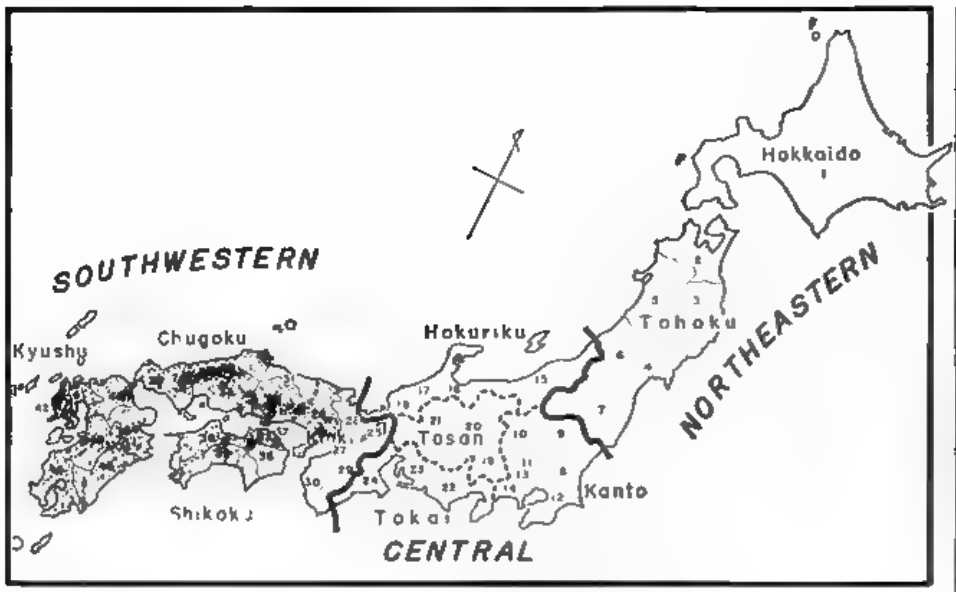


Figure 4. Geographic Spread of Signals.

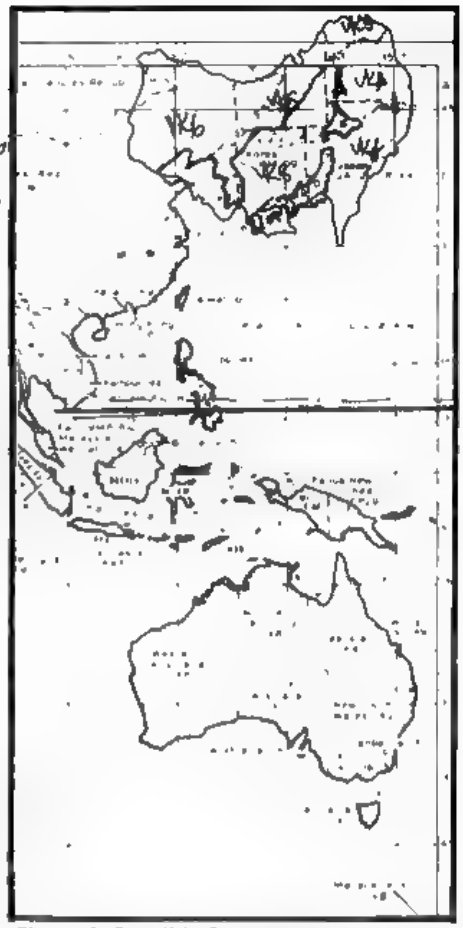


Figure 6. Possible Propagation from other parts of Australia.

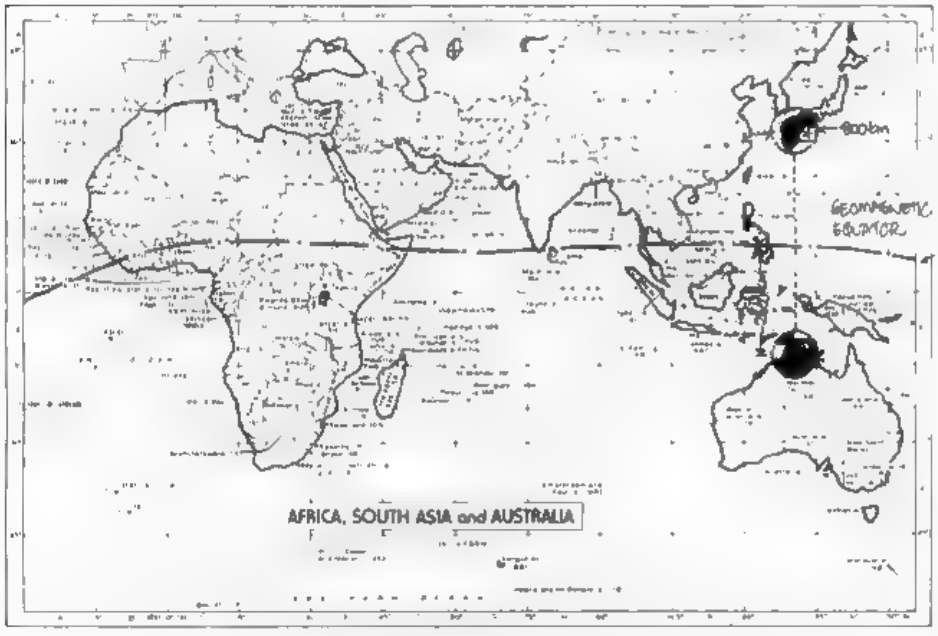


Figure 5. Relationship to the Geo-magnetic Equator.

many inaccuracies, in that periods when I was absent from Darwin on leave or days when I had other personal commitments which prevented me from operating are not taken into account. The poor performance in autumn 1981 reflects these factors.

FURTHER AREAS OF INVESTIGATION

1. HIGHER FREQUENCIES

For the last three years I have been conducting ad hoc tests on 432 MHz with JA stations when signals on 144 MHz have been strong. No reports of signals propagating have been received although 144 MHz signals at the time have been up to 59+ 20dB.

It is of interest to compare this result with the 432 MHz propagation occurring in the South Africa/Europe path where 144 MHz signals seldom exceed strength 5 and are not copyable using the SSB mode

I should add that 95% of my contacts with Japan have been using SSB although CW and FM have also been used successfully

With regard to 432 MHz propagation it is probable that the 10W power level used at both ends of the circuit is too low to overcome the path loss.

2. OTHER PARTS OF AUSTRALIA

By rotating Australia on a map about the geomagnetic equator the map at Figure 6 is produced.

From this I deduce that it is possible to establish 144 MHz propagation between the following areas in Australia and places in or near Japan

Wyndham (VK6)	to HL
Groote Eylandt and Gove (VK8)	to JA1, 2, 3
Mt. Isa (VK4)	to JA7
Birdsville (VK4)	to JA8
Alice-Springs (VK8)	to UA0 Vladivostok
Adelaide (VK5)	to UA0 Khabarovsk and Komsomolsk

CONCLUSION

This paper attempts to present in a short form information requested of me by interested amateurs of 144 MHz propagation I have experienced in Darwin

A second paper on VHF propagation on both 50 and 144 MHz with a limited theoretical appreciation will follow

TS-180S Speech Unit

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142 Woodford Road, Elizabeth North 5113

The TS-180S Speech Unit has been developed to produce an aural read-out of the transceiver display indicators. Its primary purpose is for use by amateurs who are unable to read the visual display. It forms an interesting comparison with the device recently described by VK7PH for use with the IC701.

The unit utilizes a Speech Synthesiser board type S2S produced by Telesensory Systems Inc. for calculator applications. It has a 24 word vocabulary, of which this unit uses 13 — numerals 0-9, MINUS, POINT and SILENCE (no sound emitted).

Functions provided are single or repetitive readout of the display, together with a "kHz" switch which inhibits the readout of MHz x 10, and MHz x 1 indicators. A pause period has been introduced between the end of the last digit readout and recommencement of the readings. All 9 indicators can be read, thus the "DSP/DIFF" and "DSP/M1" functions of the transceiver are catered for.

No electrical or mechanical modifications to the transceiver are required, merely the connection of 14 wires to the outputs of the Display Board X60-1090-00 located in the Counter Unit.

OPERATION

Fig. 1 is a block schematic of the unit. The TS-180S display is 7 segment multiplexed, and is strobed from right to left — the opposite direction to that required for an aural readout. A complete visual display readout takes approximately 0.1 second

The 7 segment information is applied to the ROM inputs and is converted to a hexadecimal code for presentation to the data inputs of the Speech Synthesiser.

The BCD Multiplex Strobe code, together with the demical point strobe line, are firstly buffered and then integrated to reduce, or eliminate, switching spikes or "glitches" present on the signals.

Fig. 2 shows the BCD Multiplex Strobe code and the decimal point strobes and their relationship to the indicators. Strobe 0 is fed via the control circuit to the frame counter. (A frame being one complete readout cycle of the indicators.) The output of the frame counter is then decoded, and the individual decimal outputs are then combined with selected outputs of the strobe decoder Frame 1 plus strobe 8 produce a speech start pulse, then follow frame 2 plus strobe 7, frame 3 plus strobe 6, and so on until frame 9 plus strobe 0 occurs, when, after the readout of the 100 Hz indicator a pause monostable operates adding a delay of approximately 0.4 seconds before any further readout can commence After the pause period the frame counter will step to 0, and if the manual start switch is OFF the control circuit will inhibit the input to the frame counter and the readouts will cease (auto-

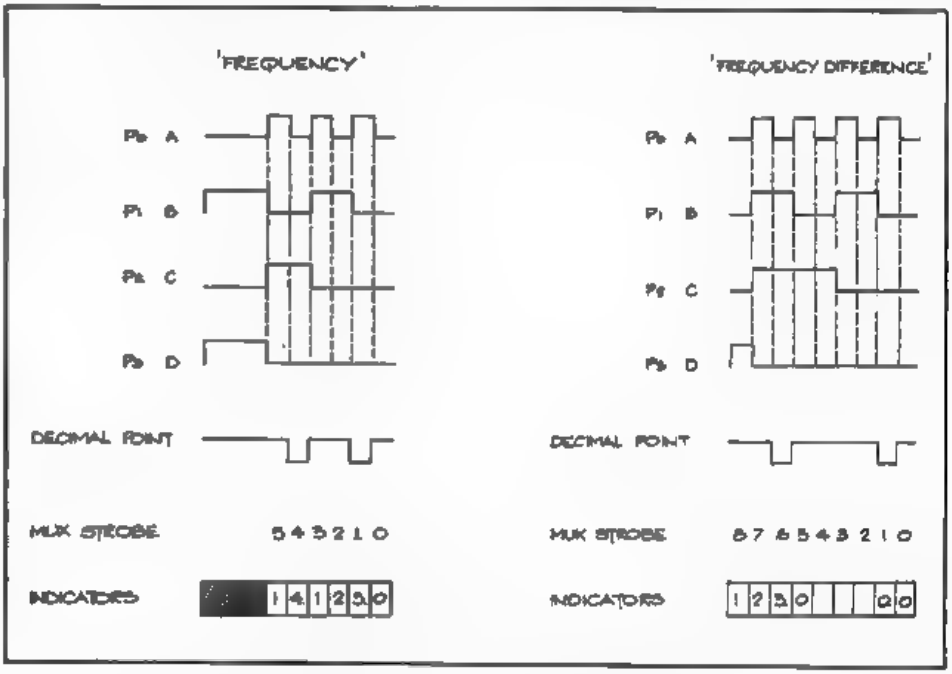


FIG. 2: TS-180S Multiplex Code

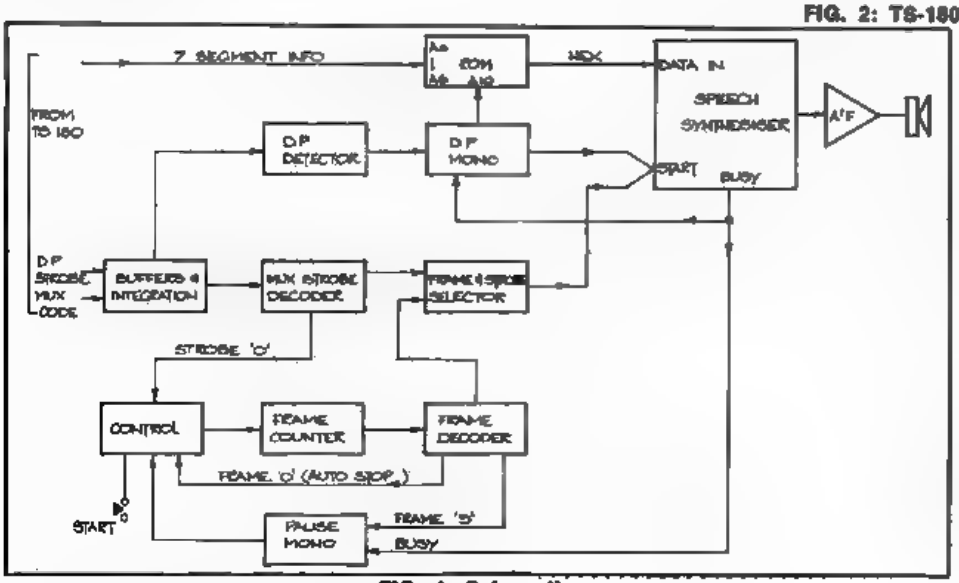


FIG. 1: Schematic

stop function).

The speech start pulse derived from the combination of frame plus strobe signals causes the Speech Synthesiser to read the hex data present at that instant. A "busy' signal is then generated by the Synthesiser and applied to the control circuit, halting any further progression of the frame counter. After the readout has been completed, "busy" returns to normal, and the next strobe 0 signal will advance the counter one count, and a readout of the next indicator will commence.

A decimal point strobe occurs simultaneously with a particular indicator strobe. Thus when indicator strobe 1 is generated (referring to the kHz x 1 indicator) a DP strobe is also present. The DP detector senses the DP strobe, and primes the DP monostable so that it can trigger immediately the "busy" signal returns to normal after the kHz x 1 readout. When this

occurs, the DP monostable triggers, and applies a signal to ROM Address A10 which immediately presents the hex code for "POINT" to the Speech Synthesiser. The DP mono pulse also initiates the Synthesiser start circuit and the word "POINT" is generated

CIRCUIT DESCRIPTION

TS-180S Signals

The following services are used from the display board within the transceiver:—

7 Segment Code (7 connections)

The 7 segment code derived from Q20 in the display unit is in a negated form — that is, a particular segment to be illuminated requires a low level (0V)

BCD Multiplex Strobe Code (4 connections)

BCD multiplex strobe code (shown in Fig. 2) is in a standard BCD form except it is generated backwards — that is the count proceeds from right to left when observed on an oscilloscope. The code counts to 5 when reading "Frequency", and 8 when in the "DSP/DIFF" function

NOTE: The multiplex code and the 7 segment identification designations on the board X60-1090-00 are reversed. Segment A is G and so on, and P0-P3 are actually P3-P0. The circuit diagram in the service manual is correct. The reversals have been corrected in the wiring out harness to the speech unit.

Decimal Point Strobe (1 connection)

As for the 7 segment code, the DP strobes are negated — a low (0V) level to illuminate, they occur simultaneously with the particular indicator strobe

0 and +5 Volts (2 connections)

From the TS-180S — 0V line is commoned to the speech unit 0V line, whilst the +5V is used to power the first integrated circuit (hex inverter 74C04) — this prevents a current flow from the inputs of the inverters into the +5 rail when the speech unit is in the OFF condition. (Current flow via input protective diodes.) The outputs of the first inverters are fed via 56k integrating resistors, thus restricing the possible current flow into the following circuits when OFF. Thus the outputs of the TS-180S IC Q20 are protected.

Speech Unit

POWER SUPPLY (See Fig. 3).

The speech unit requires the following voltage rails for its operation:—

(a) +18V unregulated to the A/F amplifier.

(b) +5V to all ICs and the Speech Synthesiser.

(c) —10V to the Speech Synthesiser.

These supplies are derived from a multi-tapped transformer type AR2155.

The 12.5V AC is half wave rectified and smoothed, giving +18.5V. The 9.5V AC is half wave rectified and smoothed, the resultant —14V then passes to a 7905, a —5V regulator which has its 0V terminal connected to a —ve potential such that —10V appears at its output. The 7.5V AC is rectified and smoothed giving +9.6V which passes to a 7805 +5V regulator

7 SEGMENT/HEX CONVERTER AND SPEECH OUTPUT (Fig. 4).

A 2716 EPROM IC14 has been programmed to accept the 7 segment code and convert it to a hex code to drive the Speech Synthesiser board TS1-S2S. Address inputs A6 to A0 are used for this; A10 when addressed generates hex 13, data for the word "POINT".

Any invalid codes at the input to IC14 produce hex 0D data for "SILENCE". The outputs of IC14 (00-04) pass to WP0-WP4 on the S2S board. WP5 and 6 are not used and are grounded.

The "START" input and "BUSY" output of the Speech Synthesiser, and the decimal point input to IC14 are connected to the speech unit circuit, to be described later

The "AAS" output of the Synthesiser is the synthesised voice output, which passes via a simple low-pass filter to the A/F amplifier LM380 IC15. Provision has been made for the connection of an external speaker if desired

ROM CONVERSION INFORMATION

7 segment output	hex input word		
0	01	00	OH
1	4F	01	ONE
2	12	02	TWO
3	06	03	THREE
4	4C	04	FOUR
5	24	05	FIVE

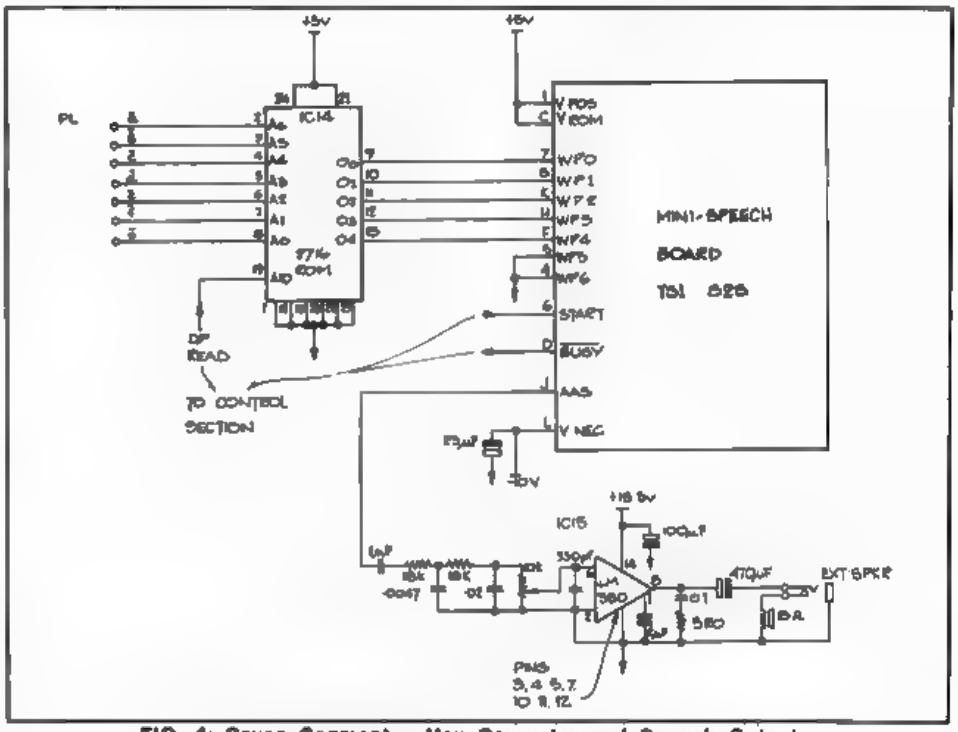


FIG. 4: Seven Segment — Hex Converter and Speech Output

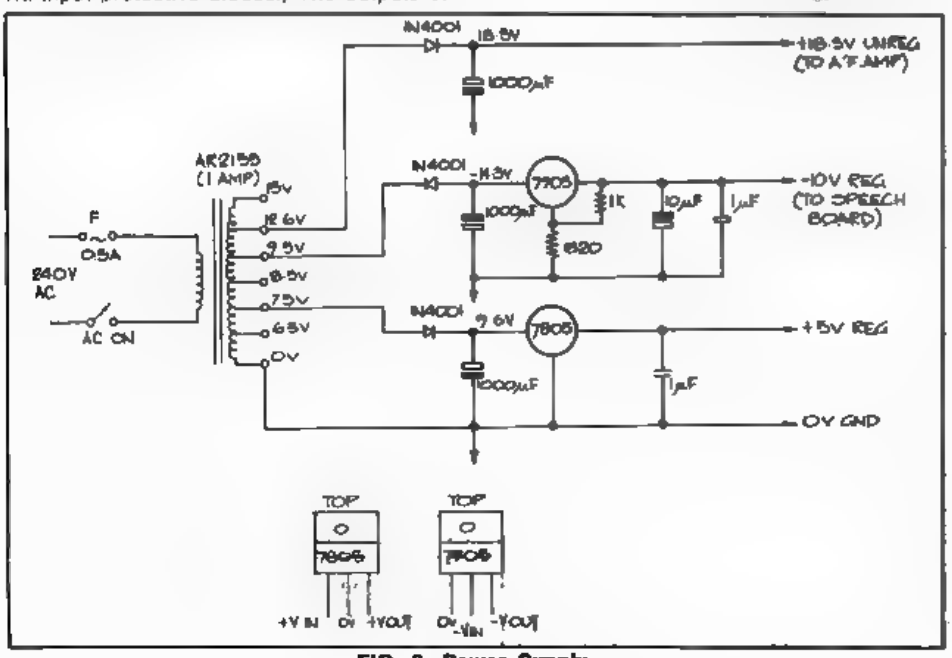


FIG. 3: Power Supply

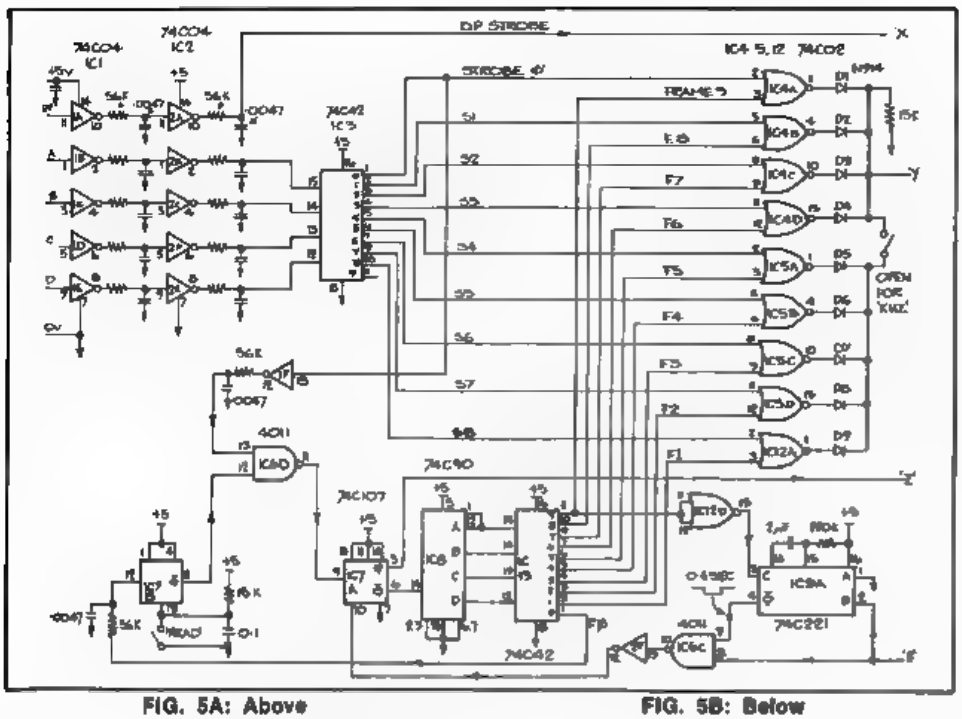


FIG. 5A: Above

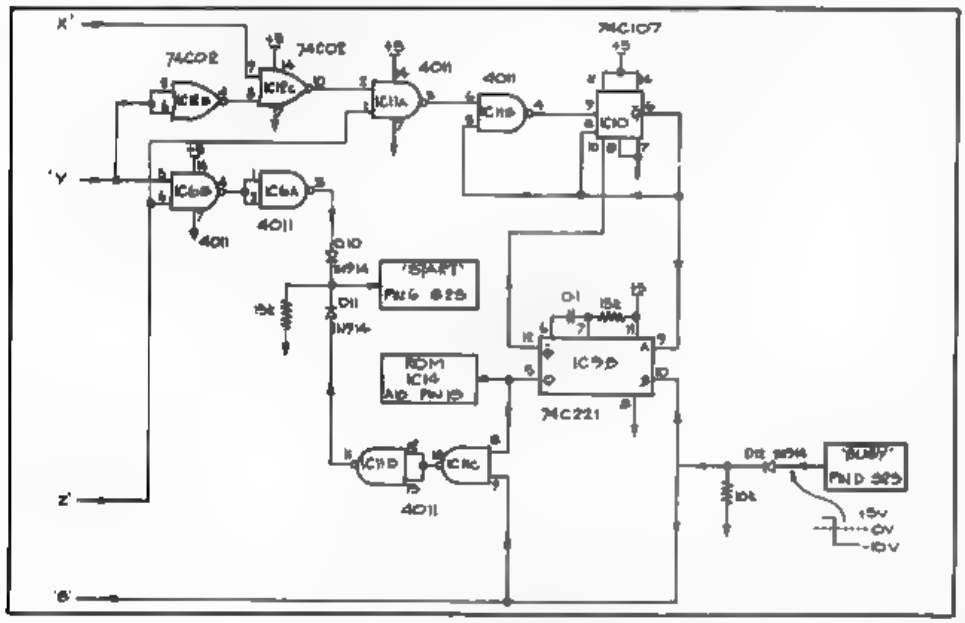


FIG. 5B: Below

6	20	06	SIX
7	0D*	07	SEVEN
8	00	08	EIGHT
9	04	09	NINE
—ve	7E	15	MINUS
"SILENCE"	7F	0D	—
"POINT"	400 to 7F0	13	POINT

ROM address inputs A6 = a to A0 = g, A10 = Point.

ROM Outputs 00 = LSB, 04 = MSB

* The TS-180S display uses segments a, b, c and f for '7'

SPEECH UNIT CIRCUIT (Figs. 5 and 5A)

IC1 and IC2 (74C04) are hex inverter buffers of which 5 sections are used to buffer and integrate the multiplex code and decimal point strobe lines. IC1 derives its +5V rail from the transceiver supply. The multiplex code lines A, B, C and D pass to IC3 (74C42) where they are decoded. The DP strobe passes to IC12C. Strobe outputs 0 to 8 are connected to NOR gates IC4, 5 and 12 (74C02). Strobe 0 is inverted by IC1F, integrated, and fed to NAND gate IC6D (4011). This gate is controlled by the manual start Flip-Flop IC7B (74C107). When the "READ" switch is closed, Q goes high, which opens gate IC6D, allowing the strobe 0 pulses to pass to the clock input of IC7A. Providing a low "busy" signal is not present at pin 10 ("clear"), IC7A Q will fall from high to low causing the frame counter IC8 (74C90) to advance one count. At the same time IC7A Q will go high, which opens NAND gates IC6B and IC11A.

The outputs of the frame counter IC8 are decoded by IC13 (74C42), and the decimal outputs of the decoder pass to the NOR gates IC4, 5 and 12, where each frame signal combines with an individual strobe. Upon a manual start being initiated, the frame counter will advance to a count of 1, the decoded 1 falls low, and this appears at pin 3 of IC12A NOR gate. As the individual strobes are occurring continually, there comes a point where pin 2 of IC12A goes low from strobe 8, the output of IC12A will then go high, diode D9 conducts, and if the "kHz" switch is closed, this positive signal will pass to NAND gate IC6B, which was opened by IC7A prior to the counter advancing. The output of IC6B falls low, is inverted by IC6A, and the resultant positive step passes via diode D10 to the Speech Synthesiser start input. The Speech Synthesiser now reads out the numeral present on indicator 9 (left hand of display). The "busy" signal falls from +5 to —10 volts, D12 in combination with the 10k resistor prevent the speech unit "busy" line from falling below 0V. The "busy" signal passes to IC9A (pause mono) and via NAND gate IC6C to the inverter IC2F. The resultant low passes to the "clear" input of IC7A, which causes Q to go high and Q to fall. Q falling, closes gate IC6B and thus prevents any more start pulses or glitches from appearing at the Speech Synthesiser start input. Whilst IC7A is held in the "clear" state by the "busy" signal, strobe 0 pulses appearing at its input have no effect.

When the "busy" signal returns to +5V after the readout is completed, the "clear" of IC7A is removed, the next strobe 0 pulse appearing at its clock input causes its Q output to fall, and the frame counter advances to 2. A new start pulse is generated when strobe 7 occurs, and indicator 8 is read. Thus the sequence continues until the last indicator is read. Since the frame counter is now at 9, the low level at pin 11 of IC13 is inverted to a high level by IC12D and applied to pin 13 of IC9A, removing the "clear" signal. When the "busy" signal returns to +5 volts after the readout of the 100 Hz indicator it triggers IC9A, its Q output goes low for about 0.4 seconds. This passes via gate IC6C and inverter IC2F to IC7A, and holds IC7A in the clear state for this pause period, after which IC7A passes the next strobe 0 pulse to IC8. The frame counter now advances to 0, and the low signal on pin 1 of IC13 clocks IC7B (if the "READ" switch is open). IC7B Q goes low, closing gate IC6D, preventing any strobe 0 pulses from reaching IC7A. The readouts now cease.

When the "kHz" switch is open, only strobes S3 to S0 can initiate a readout, representing indicators 4, 3, 2 and 1. Thus only the kHz and 0.1 kHz indicators will be read.

DECIMAL POINT READOUT

During each strobed start pulse the output of inverter IC12B will be low, and if a DP strobe is present pin 9 of IC12C (NOR gate) will also be low. IC12C output will go high, and pass via NAND gates IC11A and IC11B to the clock input of IC10. As described earlier, when the "busy" signal goes low, IC7A is "cleared", and its Q output will go low, which closes NAND gate

IC11A, forcing its output high, the output of IC11B will go low, and this transition clocks IC10 (74C107). Its Q output will fall, closing gate IC11B to prevent any further clock pulses being received by IC10. Because IC10 Q has gone low, this primes the DP monostable IC9B ready to accept a +ve going transition from the "busy" signal. When the readout of the indicator with a DP present is complete, "busy" goes high, and IC9B triggers generating a pulse of some 1.5 milliseconds in length. The Q signal goes low, which clears IC10. The Q signal goes to ROM address 10, which presents the hex code for "point" to the Speech Synthesiser. At the same time the Q signal passes via NAND gate IC11C (which is open because "busy" is high). The falling output of IC11C is inverted by IC11D and presented, via diode D11, to the Speech Synthesiser start input. "Busy" falls low, closing gate IC11C and the word "POINT" is read. Since IC10 (the DP detector) has been cleared by IC9B the circuit is restored to normal until a further DP is detected.

It should be remembered that, although a positive start pulse to the Speech Synthesiser generates a "busy" signal, the actual readout does not commence until the start signal falls to 0V.

CONCLUSION

The unit described was built for a blind VK2 amateur and was designed "from scratch" without any knowledge of other types of similar readout devices. Being a "one-off" it was hard-wired and fitted into an "Archer" sloping-front cabinet 20 x 14.9 x 3.5 cm (front) x 7 cm (rear). Installation by another VK2 took only about 30 minutes.

The Telesensory Speech Synthesiser was obtained from A.J. Distributors Pty. Ltd., of 44 Prospect Road, Prospect 5082.

Meet Frequency Fred...

the man we all dread.

He tunes up on the spot you are using,
Then calls a CQ, right over you —
A practice we find unamusing.

There's a rare DX station and you have his location

But it's tough as his signal's not strong —
But along comes our Fred, in a manner ill-bred,

And tunes up on the spot loud and long.

Without any doubt, this arrogant lout
Won't listen for a moment or two,
To see if it's clear to go on the air —
Could this be a portrait of YOU?

—From "Break-In" 1981

Choosing a Computer

from 'ARNS Bulletin' Sept '81

Choosing a computer is somewhat like choosing a car. There are so many different varieties and makes that it boggles the mind when looking for one. Like cars, it depends a great deal on what is expected in performance along with speed, ease of operation and such.

Some computers work with colour, others black and white. If you are interested in games, colour might be the route. If you are interested in business use, such as word processing, address lists, etc., it is well to stick with black and white. If you will note carefully, the number of words to the line on colour computers is less than black and white. This is apparently because it is not possible to get the resolution for small letters with colour. There is a unit being sold for use with your own TV, colour or black. It has a whole 12 letters to the line, which would be useless for word processing. Another such unit has only 24 letters to the line. So, the number of words to the line are important. Black and white is undoubtedly the choice for any business use. After all, have you ever heard of a colour screen on business machine costing thousands of dollars? No, because black and white is better. On the other hand if you are looking for games, colour is fine. You might be able to find a suitable computer half way in between.

Probably the most important feature of any computer is the support in programmes. Without programmes available it is like buying a car and finding out there are no filling stations! Or with some computers which have limited programmes available, like buying a car which uses diesel and you can find only a few stations selling it. The greatest number of programmes available at this date are for the Radio Shack computers, with Apple second. The rest are way down the line. Apple apparently is creeping up on Radio Shack though and in a couple of years might be even. Next in importance is publications available. There are now perhaps a dozen magazines catering exclusively to the Radio Shack computers. These contain programmes, and in many cases you can subscribe to a tape or disk service, receiving the listed programmes in the magazine ready to run without the necessity of copying them from the page (which is very, very difficult — a computer won't let you get by with a single error).

Another consideration is storage, first in the computer itself and second in the storage medium such as tapes and disks. Internal storage is important for the long programmes or articles. The usual starter is 16k and most can be purchased up to 48k. (In the future 64k might become available, they are now if you want to go into the higher priced computers). You will need 48k for long address lists or long articles. Of course, as you go up in equipment, you also go up in price. But you also go up in convenience and speed. Again, it depends on whether time is an important factor. Disks are much, much faster than tapes, and will store a lot of information on each one.

Also an important factor is repair service. If your computer fails, how do you get it repaired? Are there service stores available reasonably close by, or do you have to send it back to Japan? Investigate carefully the repair situation, something is bound to happen sooner or later.

There are several amateur radio nets catering to computers. There are many for the Radio Shack and the Apple has a few nets. These are very interesting and informative. Suppose you are thinking of squandering a considerable sum of money for a programme. Someone on the net can usually give you a rundown on it before you buy it. Another feature is problems you might have that someone has had previously and can help you out, perhaps saving a trip to a repair centre. These are valuable.

A very important consideration is the type of programming for which the computer is built. Most of them use BASIC. This is a programme developed for the newcomer. It is easy to learn and uses plain English for the commands. If you want it to print, you type "PRINT". The lines are numbered for convenience. It is easy to learn. One caution although all of the popular home computers are BASIC it seems that each manufacturer has added certain commands and a programme on one computer will not work on another brand even though both use BASIC. Some changes are inevitably required. BASIC although easy, is not fast in operation. But since it is in English, bugs are easy to find. Then, if you are interested in speed you can go into machine language which requires a great deal of study, but it will give extraordinary speed in operation.

So, when you are looking for your micro, be sure to consider all of these features before you plunk down the money. Talk to others if available and always, always have a demonstration before you buy. Perhaps there is a computer club in your area. There are a great many Radio Shack computer clubs, and one might be available. There are also some Apple clubs.

The microcomputer world has just exploded! IBM has entered the market along with XEROX and several others. There will soon be at least a dozen popular computers from which to make your choice. It isn't going to be easy.

Does your Yagi Droop? or the Droop Eliminator

Jim Joyce VK3DFD
44 Wren Street, Altona 3018

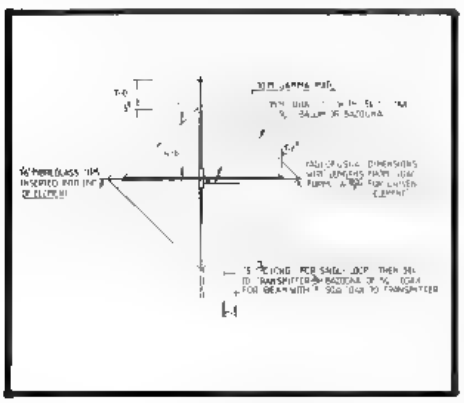
In his original introduction, which, to protect those of tender years, has been modified slightly, the author stated that droop can be cured. He was referring, of course, to the sagging tips of yagi antenna elements, which can obviously be raised with tie-wires. What is not obvious is that this can greatly improve the antenna performance.

Necessity being the mother of invention, this antenna came about by the fact that the local radio inspector took one look at my home-brew 3 element quad for 11 metres and informed my wife that it had to be down by the next day, as my CB licence only entitled me to a non-gain antenna.

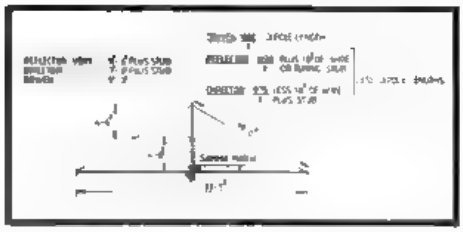
So down came the quad and up went a dipole. After the quad, the dipole was disappointing, so I decided to improve performance to that of a single quad by adding to the split dipole a full-wavelength wire loop around it, driven by the tips of the dipole element. There was a marked improvement over a reference dipole I was using for test purposes. I also found I could take the bottom half-loop off the antenna without much drop in performance. Furthermore, with the full loop driven by the element tips, the dip with a GDO was at least three times as great as at the centre of a single dipole, indicating to me that the "Q" of the antenna was higher than the single dipole or the delta loop.

EXPERIMENTS

When my amateur licence came along, I experimented with all the usual antennas, such as 6 element monobander yagis, quads interlaced yagis, co-phased verticals, etc. I found to my surprise that a 6 element delta loop yag performed better on 10 metres than all except a monoband 6 element quad. A 6 element delta with a 3 element quad on 15 metres around the outside performed so well that it did not warrant the extra spreaders and wire to make it a full quad.

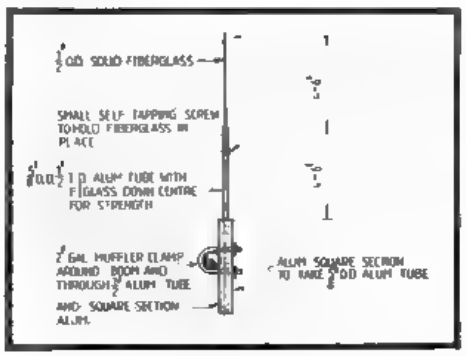


DIA. 1: Antenna for 10 and 15 metres



DIA. 2: Driven element for 20 metres

This antenna design has several good points. It makes the elements of a yagi more rigid (cuts out the droop) and gives better reception, also a better signal out. It seems there are two points of maximum current, one at the normal driven point at the centre of the dipole, plus another at the apex of the wire. As everybody knows, the higher the antenna the better. On 20 metres the apex is 9 feet higher than the boom; a saving on tower height, especially if you live in an area where towers are a no-no! Another point is that a second band is easily added by extending the length of the fibreglass verticals, fitting fibreglass tips in the ends of the yagi, and stringing either a quad or V antenna from the extensions. Or you can build a 20 metre delta loop and put wire dipoles inside it. However, if you do put dipoles inside the 20 metre, make sure to cut them a bit longer to make up for the capacitive effect you get from the loop. The variations are virtually unlimited. Why not isolate the vertical section from the boom and make it a half-wave dipole for 52 MHz, or full-wave on 146 MHz for working mobiles or repeaters? If you have the antenna height, why not hang Vs off the fibreglass tips for the new 30 metre band?



DIA. 3: Vertical Section

MEASUREMENTS

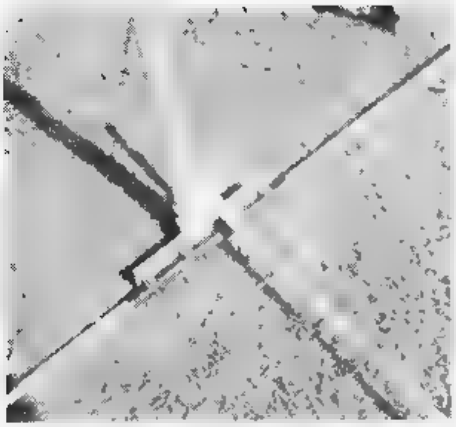
During the last five years experimenting with this antenna, I have had great help from another dedicated antenna experimenter, Rick VK3DEY, who luckily lives only 1 km away. This makes the job of tuning and getting comparison reports much easier, particularly when he also has built and used the same type of antenna so we could try variations. As we both ran the same gear, FT101Es, with Leson mikes and antennas at the same height we would get the same reports from overseas amateurs. The method of testing was for one of us to stay as normal, making no changes, while the other one would then try antenna experiments. When one of us got 1 or 2 S points better, we would stay that way for at least a week. If the reports confirmed that one antenna was better than the other, whoever had the best report would then stay "as is", and the other would start a tuning or different antenna construction programme until he could get a better consistent report than the reference station. Believe me, there is nothing like stiff competition to keep your head down and rear up!

Three elements on 20m tested 95 points, front to back — 25 ft. boom, 12 ft. to reflector, 13 ft. to director.

The best method of building this type of antenna from scratch is to take the dipole off the boom, then add the wire and aim for the same dip as the dipole at the apex of the V. You will also get a dip at the tip of the dipole but it will vary due to putting the GDO near the high voltage point on the antenna. You may have to add some extra wire to the delta, perhaps, to make up for the effect of the angle of the wire to dipole. The formula I use is to deduct the length of the dipole from the quad formula circumference, then add an extra foot.

E.g. f 14.200
Dipole length 33 ft. 5 in.
Quad formula (1005/f) 70 ft. 9 in.
Wire length 70 ft. 9 in. — 33 ft. 5 in. = 37 ft. 4 in. + 1 ft. extra wire
Vertical height 9 ft. approx. mate'y for driven element.

The director height needs to be only 7 ft. 6 in. plus stub about 1 ft. up the vertical,



Method of attaching element and vertical to boom

and the reflector height 9 ft. 6 in. with a 2 ft. tuning stub down the vertical, its shorting bar near the bottom of the stub.

MATCHING

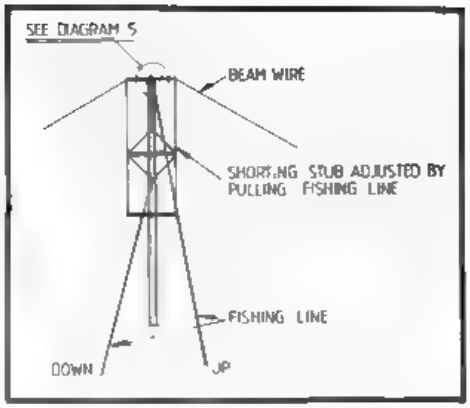
As usual, wide spacing gives you easier matching. At 0.175 wavelength with 3 elements 50 ohm matches well, using a noise bridge. A bazooka may be made from the outer braid of larger coax than the beam feeder. Cut off about 3 feet more than a quarter wavelength of the larger coax. Any outer braid left over can be impregnated with flux then stretched — it works quite well as solder remover. The large braid is put over the feeder and soldered to its outer braid an electrical quarter-wave down. Stretch it tight on the coax then cut off one inch down from the point of connection to the yagi or quad. It should not make any contact with inner or outer braid at this point. Then wrap waterproof tape around it all when finished. This works as a type of balun to stop line radiation and match unbalanced coax to the beam.

It is easier to use the gamma match with two aluminium tubes, simple and very seldom breaks down. If running high power it does not need wide spaced transmitting capacitors, and makes matching close spaced or multi-elements much easier.

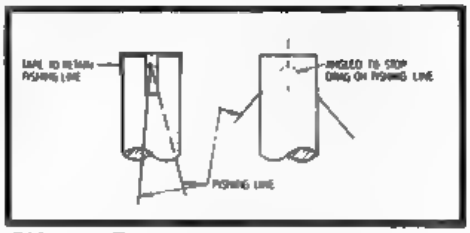
When making these antennas, I was asked many times where to get cheap fibreglass. There are thousands of them acting as spreaders for the SEC lines down nearly every street in Melbourne, but that is a risky source! They are available from a local manufacturer in half inch or three-quarter inch by 9 feet long. You can also get them tapered if you want to pay the price of machining.

TUNING

Finally, tuning, if using stubs on the reflector or directors. I found that tuning for front to back ratio can be quite critical, one-quarter of an inch can make the difference between 12 or 25 dB. The method I use is to tune the beam at operating height via two long 100-pound breaking strain pieces of fishing line. These move the shorting bar along the stub, which is made of 16 gauge solid copper wire attached to the top of the vertical section of fibreglass. Make sure the shorting bar is free



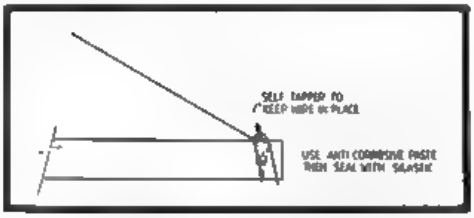
DIA. 4: Stub tuning method



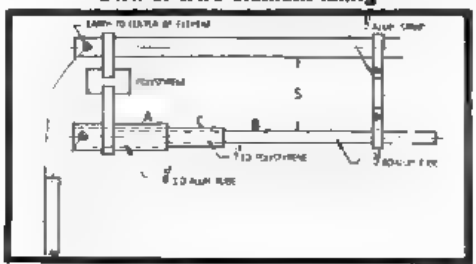
DIA. 5: Top of fibreglass vertical with groove for tuning stub

enough to move yet tight enough to stay in position when you lower the beam to solder it in its permanent position. You then cut off the excess stub.

It helps of course to have a nearby source of steady carrier while you do these adjustments; another station close enough so the signal does not vary; and with the same polarisation, otherwise it has all been for naught, sport! You may as well use a wet string. The antenna and tuning is the difference between being a plaintive cry in the dogpile, or a signal that cuts through the QRM.

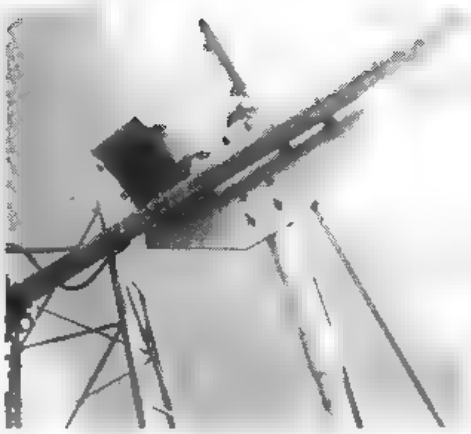


DIA. 6: Wire element fixing

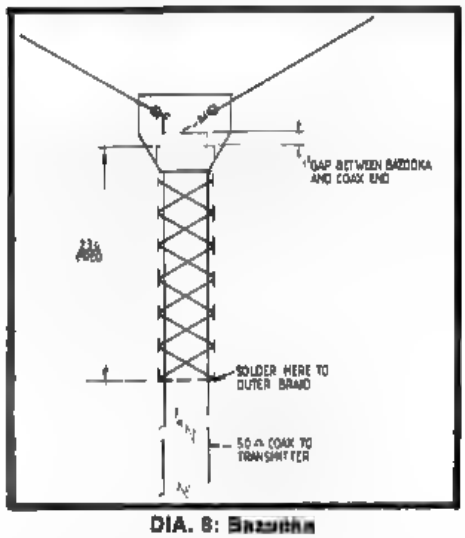


DIA. 7: Gamma match

LENGTH	A	B	C	S
10 M	5-7"	25"	7 2"	4"
15 M	6-7"	37"	8-2"	5"
20M	9-7"	49"	11-2"	6"



Feeding the three elements



DIA. 8: Bazooka

COMMENTS

I must say the antenna experiments I have done over the years keep me fit with all the exercise! I have had a great deal of enjoyment from the hobby, plus the benefit of learning about the effects of different types of antennas, and perhaps contributing something in this antenna design that may be taken further or improved upon by other amateurs with better facilities than I have at this suburban location. I am building a 3 element on a 25 foot boom for 20 metres and am hoping it will improve my signal in kilowatt alley over the TH6DXX I am presently using.

No doubt this article will cause some comment among the learned gentlemen of the amateur fraternity, as to whether it will or will not be better than known and well-tried types of antennas. I would appreciate any feedback from anyone who tries this configuration out, and what the results were, or anyone who can technically explain why it should be better or worse than the usual type of antenna. As the amateur licence is for experimenting, surely someone has tried this type before as it is such a logical approach to eliminating element droop, plus improving reception. Also, I would like to hear this design from a DX location to see how it compares with other signals from the same area, so how about it someone, please? ■

THUMBNAIL SKETCHES

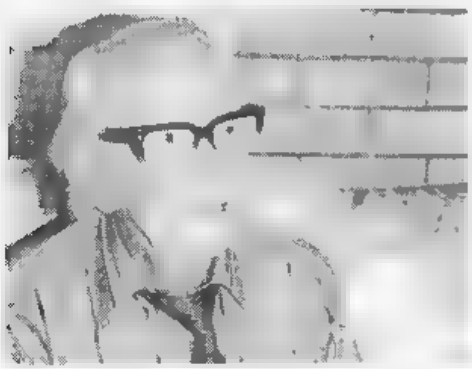
ARTHUR WALZ, ex 4AW 1926, VK4AW
Arthur, who was awarded Life Membership of the Queensland Division of the WIA in 1932, is without doubt the most knowledgeable amateur of early Queensland activities because he actively participated in administration, being President of the Queensland Division for 15 years, and was in the forefront of experimentation.

Between 1927 and 1940 Arthur was the main force behind 56 MHz (5 metres as it was then known) experiments, ground to ground and air to ground, providing several records of that period

As an active member of the Air Force Wireless Reserve, OC, Queensland, together with very good experience on HF and VHF radio led to Arthur being called up for service in 1940 with the RAAF

Arthur was promoted to Squadron Leader and was attached to HQ Melbourne before becoming responsible for DF installations in New Guinea, and finally CO 2nd RIML Townsville

VK4AW has maintained activity on the amateur bands and of latter years concentrated on satellite working



FRED MATTHEWS, OBE, ex 4FK 1924
Fred became particularly interested in amateur radio aged 19, when in 1923 the American yacht "Speedjacks" visited Brisbane The yacht was fitted with a voice radio transmitter and many local amateurs had the opportunity to hear and inspect this marvellous installation

Not long after receiving his licence Fred became involved with his brother in the Fire Alarm system and company which bears their name and which is a force in fire protection in Australia today

Fred has been Managing Director since 1945.

He has maintained his interest in historical matters generally, and prepared a paper on "The Early Years and the Magic of Wireless in Brisbane from 1921 to 1925", which he made available to the Queensland Division

Fred was honoured with an OBE in 1979 for services in the field of Fire Protection

The Institution of Fire Engineers has accorded him a Life Membership for his services to the industry He is the longest serving member in Australia.

LEO FEENAGHTY, ex 4LJ 1930, ex VK4LJ
Leo's early interest was in the army, but while searching for further interests for his company he found "wireless" and finally decided to obtain his "ticket", which took six weeks hard work with VK4FK, VK4JG, VK4JL, all from Wooloowin Radio Club.

In 1927, with VK4MM, he founded the Queensland Radio Transmitters League, becoming its first secretary, and when it became Australia-wide, first Federal Secretary, until it became the WIA, Queensland Division.

His army career led him to the rank of Major, but when he became Assistant Secretary of the Main Roads Department in 1929, he went on reserve, and later amateur radio also suffered.

For many years as Secretary of the Main Roads Department in Queensland his signature was a familiar sight on Queensland motor vehicles.

Leo founded and edited "QTC" for some 4½ years from 1927, and ensured that copies were deposited in the State Library Leo has been retired for some years on the Gold Coast.

The WIA is in business for more members. Please help.

CLIFF GOLD, DCG 1926, VK4CG
Cliff became interested in radio as a schoolboy aged 19, when in 1923 he visited the WIA exhibit at the Brisbane Exhibition He became active with spark coils (his district was "alive" with them) and big "hunks" of galena

Cliff lays claim, with 4WA, to building the first crystal controlled transmitter, using Brazilian quartz spectacle lens ground to size

Cliff was a Federal Councillor in 1928

After some years in Brisbane he moved to Toowoomba and using much of his own amateur gear, helped his uncle, Ted Gold 4EG, build 4GR, the only Queensland "B" class station, in Toowoomba. Power supplies were a problem and a DC generator off the mains was tapped to provide 180 volts AC, and all the transformers were completely built by Cliff

Cliff became 4GR's first full-time announcer as well as keeping the valves glowing

Children of that day knew him as Uncle Cliff and his foil, Cliff himself as Willie Evergrow Quite a humorous session

Cliff retired from the technical side of the PMG some years ago

EMC
(Electro Magnetic Compatibility)

If radio frequency interference is causing you a problem you are reminded that — "Advice on all types and aspects of interference (PLI, TVI, AFI, etc.) is available from the National EMC Advisory Service".

FORWARD DETAILS TO
VK3QQ,
Federal EMC Co-ordinator, QTHR.

Philips SVC 100L/110 — A Sequel

A.R. Dexter VK5DL
9 Alexandrina Road, Mount Barker 5251

In the June 1981 issue of Amateur Radio (page 13), Tony described briefly the Philips type SVC 100L/110 transmitter and asked any readers who knew anything about this model to get in touch with him. This request brought an excellent response and he has put this extra information together to provide another small piece of Australian radio history.

The first letter which I received was from Sid Wardle VK2DID, who said that he had seen the last few of these transmitters made and who suggested that I contact Ken Horan VK5IT (formerly VK5DQ), who was the project engineer involved with the production of the SVC 100L/110 at the Philips Apparatus Factory, Glenmore Road, Paddington, Sydney, in 1944. A telephone call from Ken confirmed this. He said that about 300 of these units were made for the US Navy and were used in the Pacific Island campaigns. The units were splash-proof, with their top and front covers, so that they could be landed by boat, and were fully tropic-proofed. In addition, approximately 100 units were made for the RN and RAN.

Frank Izon VK2DQX (formerly VK2PC) wrote a most interesting letter saying that he had been associated with the whole project. He had been present at the installation of the first unit off the production line, together with a type Y43 receiver, in HMS Shropshire at Garden Island. The Shropshire was on loan from the RN to the RAN at this time. Frank was Defence Co-ordinator at the Philips Electrical Industries from 1941 until the end of the war. He said that the designers of the SVC 100L/110 included Messrs. Henk Teunisson (Dutch, Chief Engineer) and Hugh MacDonald (New Zealander, Deputy Chief Engineer).

The completed cost of each unit was initially £732 but this was reduced to £716 plus spares at £113 but excluding valves. Extra costs included the instruction manual (15/-) and packing for those not installed in Sydney. The units were produced on a "cost-plus" basis which added a further 25%. The final acceptance of the units was through Allan Fairhall VK2KB, who was in charge of the Radio and Signals Section, Ministry of Munitions in NSW at this time.

According to Ken Horan, at the cessation of hostilities, many of the surplus units were dumped at sea. A few however survived. Three were sold by tender by the Post Office in Adelaide in 1947. Les Catford VK5LC got one of these, and this is the unit which has been owned by me since 1978. Ron Henderson VK1RH wrote to say that the Adelaide University Radio Club had used a modified SVC 100L/110 during his student days in the period 1953-56. However, this club has not functioned for many years, and the equipment has been disposed of.

Well, that ends the matter of the SVC 100L/110. However, if anyone else has any further information, contact the writer.

This is only a Test . . .

Saturday morning, 6 a.m., and it's my day off. I've got a thousand things planned for today. This is really too early to get up. Roll over and go back to sleep. What in the world are those kids doing already outside playing at this time of day? Where did they get the sledge hammer that they're using to beat on the side of the house? I'm going to destroy the "clacker" on that Big Wheel tricycle. Why did I think I'd be able to sleep this morning? Uh-oh, 8 a.m. (yawn) already. I gotta get some coffee. Dog-gone-it, there goes the phone.

Hello . . there's what? . . . Oh geeez . . . This morning? . . . I gotta get some coffee . . OK, I'll check into the net . . . good-bye. Where's my robe? What? Oh, sure honey, I remember. I'll get right on the garage as soon as the NET is over. Yeah, we might even be able to get one of the cars in the double garage this winter. You bet, I'll get the dead limb on the tree in the front yard right after I get the garage clean enough to find the tree saw. Open up the shack. Man, I've got a lot of stuff piled up in here. Turn on the rig. I've gotta get some coffee in a minute. Net control, this is WA5RPP checking into the net. Yes, I understand the situation is a downed jet plane, and that the two men aboard have bailed out safely. I also understand . . . "THIS IS ONLY A TEST". Did I remember to plug in the coffee pot? Who's at the door? You kids better not be ringing that doorbell. Oh, hi Jack. You aren't KU5B (WB5TZZ)? I see, you are a simulated downed airman from a simulated crashed plane. Sure, you can park your car in my driveway. As soon as they send out mobile units, they'll find you in short order and I can get some coffee. I remember . . . THIS IS ONLY A TEST. Back to the rig. Yeah, the mobiles are closing in on the blue Toyota that is parked in my driveway simulating a downed airman. Now I can get my coffee, finally. I don't mind a simulated Emergency Test, but I get a little cranky if I have to simulate the coffee, too!

— WA5RPP

Derived from "Collector and Emitter" Nov '81

What Price Construction?

Frequently one is faced with the question, "Will I build or will I buy?" On many occasions the choice is a very difficult one. Just take the example of a multimeter for instance.

Who would think of building a multimeter when one, accurately calibrated, can be bought so cheaply? And how many times have you heard the would-be constructor saying, "I could build the GDO all right but I'd never be able to calibrate it. It's much cheaper to go ahead and buy one." Well, possibly this person is right. But have you considered how much has it cost him in experience to buy the item rather than build it. Or for that matter, buying a new transceiver instead of converting an ex-disposal unit was the practice. Just how much would he have learned by doing the job rather than having it done for him?

However poorly a unit functions, if it is made or converted by someone as a one-off job then that person must have learned a little about its construction and principles. And, unless that person has no powers of observation whatever, he will be able, by careful criticism, to see his faults and correct them either in the prototype or in a subsequent model. The very action of doing the job has shown what the job is all about. Of course complete recognition and understanding will not come immediately, but will come eventually.

Many amateurs consider that the practical side of electronics is a joke, or a bore or an unnecessary imposition. They consider that bright people should remember the theory, just because it is theory. But how much more meaningful will that theory become if it is reinforced with practice.

Radio Clubs, via the many classes, strive continually to help amateurs UNDERSTAND radio. It is just not good enough to join wire A to point X, pull down switch Z and hope for the best.

Perhaps the wise Chinaman who said "I hear and I forget, I see and I remember, I do and I understand", had something after all, so what price construction?

From "Westlakes Amateur Radio Club" Newsletter May 1982

Photographs for AR
DON'T KEEP THEM TO YOURSELF
Send them in – NOW

HOW'S DX

Ken J McLachlan VK3AH
PO Box 39, Moorooibark 3138

During my writing and corre ation of HOW'S DX over the last year it has always been my intention to invite some personalities who have contributed to the hobby over the years to express their point of view and share some of their experiences with the readers of AR

The f rst invitation to participate was made to an avid CW listener who suppl es copious and accurate nformation for this column of the magazine, who has the outstanding total of 330 countries heard on CW and 323 verified since 1945 Th s listener could be no one else but Er c Trebilcock known to all as SWL L 30042 / BCRS 195 who has voluntar ly and unse fishly contributed thousands of hours to our hobby Very few apart from his XY_ Gene family and close friends know how much Eric has contributed to the hobby

It would be impossib e to attempt to name everything that th s quiet and unassuming gent eman has done or the number of years that he has been do ng it but a chance glance at a Wireless Weekly of 1935 vintage showed that Er c BERS 195 came third in the BERJ Rece ving Contest that year and t s known that this was not his first or last partic pation in such a contest. Since that period there have been many rearrangements of the ornaments on the mantlepiece to make way for trophies such as the Rosebowl wh ch is awarded annually to the winner of the SW_ Section in the BERU Contest

Eric, being presented with his award for the 1980 BERU Contest by Dennis, G3MXJ. This was Eric's 40th entry and seventh win in the contest.

Also it is not general knowledge that prior to WW I Eric under his own call sign VK5TK, operated from Tennant Creek in the Northern Territory Skipping a couple of decades of time, due to the necessity of brev ty he took over the VK3 Inwards QSL Bureau to ass st for a short time until a su table volunteer was found No one else came forward or was ava ab e and Eric operated it unaided for some twenty years Dur ng this period, Eric retired after fifty years w th the one employer the Commonwea th of Australia In 1976, in the Queen's Birthday Honors list, Eric, was awarded the British Empire Meda with the c tation reading "FOR PUBLIC SERVICE

The Victorian Division of the WIA in 1980 recognised Eric's service and conferred Life Membership of the Institute to him for his untiring service to the VK3 Inwards QSL Bureau and to his fellow amateur

Eric Trebilcock, B.E.M., WIA Life Member and SWL L30042 / BCRS 195 over to you

During my fifty years plus membership of the Wireless Institute of Australia, I have, on more than one occasion, become the recipient of one of its honors including Honorary Life Membership which I thought would be the final. However, "Amateur Radio's" DX Editor has decided otherwise and has kindly asked me to be this month's GUEST DX EDITOR, a position I sincerely and most thankfully accept.

As an ordinary fellow, who has been around a relatively long time, enjoying the bad times as well as the good, and also never having spare moments on my hands, it has often given me a cold sweat to hear, and read about my fellow men and women, of all ages and standings, getting into a state of boredom because they could find nothing to do to fill in their spare time.

Why, you may well ask, to which my reply is NO-ONE should get into such a groove in this day and age, with all the various hobbies that are around waiting for takers. These are too numerous to mention here, but some which come to mind are Coin Collecting, Stamp Collecting, Photography and Amateur Radio, all four of which have been part of my life continuously since my school days.

During my first working days, some of my friends took an interest in amateur radio also, and we spent many an hour, singly and collectively, learning all about the simplicity of radio, or, as it was termed then, sixty years ago, "A Fascinating Game, played by Young and Old" It kept our hands full and there was never a dull moment in our lives!

It is true that we tinkered with only the simple gadgets such as crystal sets, aerials, earths, headphones, dry batteries, insulators - even water pipes and home made morse keys - yet come to think about it, we were both learning and keeping from becoming bored with ourselves through would-be idleness.

As then, so now it behoves of all Amateur Radio enthusiasts, wherever you may be, to do your best to lessen the boredom of your fellow men and women in your locality, by whatever means is best available - you can do this, readily by preaching the Gospel of Amateur Radio, at every opportunity.

A second matter, which angers me at times, is one which all of you readers out there must meet up with from time to time with regards to the deterioration in Amateur Radio Operating behaviour in the past few years. To quote instances, I mention the running of carriers for minutes on end when tuning up, as well as absence of call signs when so doing, also the maddening pileups which occur almost daily on frequencies occupied by rare call signs. The bad manners indulged in have reached beyond this old timer's wildest dreams of half a century ago, at which time good operating manners were the rule with hardly any exceptions.

These bad habits are most noticeable on HF, and it is to be hoped that they are not repeated when the 1983 Heard Island joint Australia/America venture, which is being organised by the VK6 DX Chasers Club and is supported by the WIA, gets underway using the callsigns VK0CW, VK0HI and VK0MD

In particular, ALL Australian Amateurs interested in DX, should endeavour, (in an orderly and expeditious manner) to contact one of these three stations, on both CW and SSB during its expected six weeks of operation on all bands (including Novice segments) 160 through to six metres.

Amateurs in VK and world wide, this may be the last chance, in your lifetime, to contact the rarest 'VK" of them all, so note the time now - viz. January to March 1983. Please remember at all times fair operating tactics are a MUST

Thank you Eric for so much food for thought and to Gene and yourse f a continued happy retirement and good CW listen ng.

DX JAUNT

Well known Federal Council or Federal QSL Manager and act ve amateur, Nei VK6NE, is preparing to take a rest from the work QTH and all other dut es includ ng those of being a co-ord nator of the group that intend putting VK0HI VK0CW and VK0MD on the air in January next year and s flying off into the wide blue yonder

First stop (from 20 Oct. to 3 Nov) will be a DX operation from the Cocos (Kee ing) Islands using h s call VK9YE Then onto Christmas Island from the 3rd till the 10th November With the DXing over, t is time for some sight seeing in 9V1, pr or to attending the SEA NET Convention on the 12th. - 14th November

Neil hopes to operate the stat on that is located at the convent on centre the Majestic Hotel, whilst there After hobnobbing with the Who's Who at the amateur get together of South East Asia, Neil will attempt the 'long path' home via VS6 for a twelve day shopping spree (a l orders for souven rs received QTHR now) To round off a f ne trip Neil will stop over n both BV and BY land for a week before return ng home to work and a backlog of QSL cards

NEW VU YL

Rather rare is the sound of a VU YL operator but Usha VU2XYL has been quite act ve on 20 metres of late As it is a new call, direct QSLs can be routed through VU2RX or via the Bureau will be 100%.

DON'T FORGET

Don't forget that Ernie VK3DET, will be on a Mini DXpedit on starting on the 12th October Planned visits to Fiji signing 3D2TN, Tonga, A35TN, Western Samoa, 5W1DW and in American Samoa the call to look for is VK3DET/KH8. Full details of the proposed itinerary were published on Page 33 September '82 AR Ernie has indicated that he will be particular y looking for VK/ZL contacts Nov ce Operators and checking into the usual DX Nets when propagation al ows. All QSLs via Dick, VK3VU, PO Box 600, Ballarat 3350

HELPING

Reliable sources confirm that Marty OH2BH, has set up a train ng programme for two prospective ZA's. Word has it that Marty will be taking them to his QTH for practice in actual operation of transceivers. Congratulations Marty on your positive approach in assisting and sharing your knowledge with the amateurs of the future

MAYBE

Word is around that both XU and XV maybe active in the near future This would have to make all DXers happy and particularly those that have recently taken up the facet of the hobby that involves "pasteboard" col ecting.

SHARING

Andy ZD9BV and Lorna, ZD9YL, can never QRM each other as they use the same equipment. Who uses the equipment and when may be a different story Antennas are now operational for 80 and 40 metres, so another country s available for the Low Band DXers All QSLs to W4FRU

MALAGASY

Alain 5R8AL, has returned from his holidays in France with a new rotator for the antenna which was donated by the IDXF and intends to be more active as he has requested more cards to be printed by the Foundation.

CROZET AGAIN

George FB8WG, is scheduled to return home from his tour of duty at the end of this month An all out effort to accommodate the needy will be made and listening below 14 120 MHz could be fruitful. QSLs to F2CL

LIBYA??

5A1AD has been active but is he genuine? Work him first and worry later I8ACR has been nominated by the Tripoli based station as the QSL route. Incidentally the ARRL microscope still will not focus on cards that were eventual y received from G3JKI/5A and have been submitted for DXCC credits.

ANOTHER BY

When tuning the bands for the genuine BY1PK don't overlook a new station due to grace the airways, BY1BC.

BY1BC, is the station of the University of China, and word is that it will be joined by a BY4 from Hunan province and a BY7 from the Canton province in the near future followed by stations from other provinces. Tong Xiaoyung, who is responsible for BY1PKs operation has been conducting classes for "supervisors" from all over China and new stations will be set up in the near future

Patience, is required, whether in finding them on the band, waiting to work them or actually during a QSO as speed is not important to these friendly people Their main concern is to master their operating technique and the English language and given time they will appear on all bands including the WARC allocations as their administration has granted their approval to their use

QSL the BY1PK you hear or work to PO Box 6106, Beijing, Peoples Republic of China and you are assured of a prompt return, even if you are not in their log due to the activities of the unscrupulous in pirating their call, a courtesy card to that effect will be sent to you.

CLYDE VALLEY DX

(Refer May p21 and August p33 Amateur Radio)

This operation is now finished QSL information is via GM3UCI QTHR in current Overseas Callbook, complete with eight IRCs to cover mailing charges.

The operation was apparently quite a success and it is known that at least one VK amateur was successful in working them from all four locations and he is now anxiously awaiting his special award.

RADIO CLUB DE CHILE CELEBRATES ITS 60th ANNIVERSARY

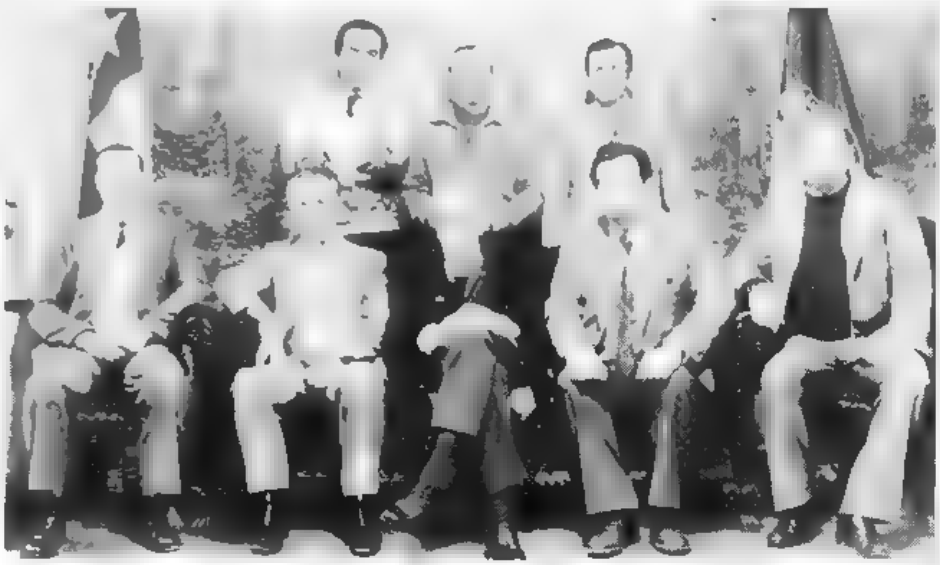
This IARU member club was founded on the 12th July 1922 by a small group of radio experimenters and has now grown, with some 2,200 members, to be one of the largest radio clubs in South America.

The club owns a comfortable two storey building which houses a conference hall with a capacity for 500 people, three separate radio shacks all containing working, all mode, modern equipment, several classrooms to prepare students for amateur licences, an import department which imports equipment from all over the world and sells to members at convenient prices a VHF department which is in charge of the various 2 metre repeaters located around Santiago and a QSL Bureau which handles over 150,000 cards per year

A magazine, "Caballeros del Aire" is also printed and distributed to the members. There were some excerpts from this magazine and also a cartoon in last months column

The official celebrations for the 60th Anniversary took place on the 17th July During the celebrations a special plaque and gold medal were presented to Sr. Enrique Sazie, XQ3XX, one of the original founders of the Club, in recognition of his contribution to Amateur Radio.

Carlos, LU9CN presenting a commemorative plaque on behalf of the IARU to Gomez, CE3GF President of R.C. de Chile on the occasion of the 60th anniversary.



Enrique, XQ3XX (seated centre front) founder member of the club surrounded by directors of the Club at the celebrations.

TA OPERATIONAL

Word is around that C6ADV will be operational this month from Turkey. It is expected that the prefix TA will be heard for the duration of his twelve month stay in Ankarra. QSL's should be routed through N7YL.

ACTIVE PREFIX

VU9 is a optional special prefix that may be used by VU stations for the period mid-August to mid-December this year. Certificate hunters may gain a special Award for contacting ten VU9 operators in this period. Requirements are a copy of your log (no certification or cards are required) to the Awards Custodian, VU2RX, V.J. Bhatt, 5B Suresh Colony, Opposite Juhu Aerodrome, Vile Parle West, Bombay 56, India. Vas, VJ2RX (VU9RX), requests that 6 IRCs accompany each application to defray mailing charges.

To gain a VU9 QSO, one may find Vas, VU9RX active most days around 14.205 MHz at 1300 UTC and an extra point towards your score of 10 may be obtained by asking Vas during a QSO if you may speak to his XYL Usha. Usha, VU2XYL, is very new to the bands and has made many friends worldwide already considering that she has only been licenced since July this year.

CHAD ACTIVATED

TL8GM claims to have the correct paperwork which enables him to cross the border and operate TT8LM. The proposed activity was due to commence in mid September and continue through until the first week of this month. QSL's to F6FYD.

SILENT KEY

It is sad to record the loss of Dick, KV4AA, who passed away suddenly in early August. A very jovial and active amateur who gave many a Dxer their first KV confirmation for DXCC. The frequency of 14.202 MHz which he generally occupied, particularly since his retirement, gave me many hours of pleasureable listening over the years.

INTERESTING QSO's

Some interesting QSO's that were overheard included those of LA1EKO/P, Op.Tor, QRV from a Gas Platform off the W. German coast. QSL via Bureau. TL8GE, Op. Michel, QTH Do obo. QSL via F6FYD. 4K0A, Op. Vic, QTH 85° N 163° E. QSL via UA1ADQ (Bureau). F6FIC/TZ Op. Jean, QTH Bamaka. QSL via F6CRS. DK2XN/TZ Op. Alex QTH Mopti. QSL via home call (Bureau). CS5SRL Boy Scouts Station at Obidos. QSL via CT1AHU. I8UDB/IL7 QTH Tremiti Is. QSL via I8ACB. C3LM. QSL via EA3BKZ.

SOURCES

These notes have been compiled with information gained from magazines including BREAK IN, CABALLEROS DEL AIRE, cqDX, DX BULLETIN, GEOFF WATTS Newsheets, QTC, QRZ DX, W6GO/K6HHD QSL MANAGER LIST, WORLD RADIO and overseas amateurs including G3NBC, ON5NT and WA3HUP. Also reports and additional information from VK3FR, PBA, UX, WJ, 4AIF, 6FS, HD, IH, NE, XI and L30042. Thanks to one and all.

DX ON THE NOVICE BANDS

10 METRES
3B8DB, 4Z4QK, 9J2BO, AH2AC (Johnston Is), C21NI FK8KAB, FW0AG, HS1ANG, KC6SX (Caroline Is), LX1KW, T2AGD, T30AC, VK0AN, VK0DX, YJ8DB.

15 METRES
4X4KP, 4Z4QK, 5D5XNT, 9J2BO, 9M8JS, C21NI, CR9AK, EA6NV, FO8GW, HI8LGS, HP1ANE, T22NS, T2AGD, T30AC, T30DB, VK0AN, VK0DX, VS5HG.

SSB WORKED ON THE WEST COAST

10 METRES
KC6SX, VK0AN

15 METRES
M1C

20 METRES
6W8DY, 9M8NL (YL), FR7GT/T, H44KR (YL), KC6WS (YL), OX9V (YL), VU2XYL (YL).

40 METRES
8P6AG, 8P6OR, 9M8JS, 9V1TL, C21NI, HK3BAV, JH1HVF/JD1, PJ9EE, T30DB, VK0AN, VP2VD.

80 METRES
9M8JS

CW HEARD AND WORKED ON THE EAST COAST

15 METRES
5Z4CM, A92E, EK0K, IT9TY, LU1HDC, N0ZO/DU2, UA0ZDA

20 METRES
FR7BP

SSB HEARD AND WORKED ON THE EAST COAST

10 METRES
3D2DX, 4D1PJS, 5W5DQ, 8J7BSJ, 8Q7AZ, 9M2EE, 9M8JS, DU1CPL, FR7CG/T, HC8PP, HS0HS, KC6WS, KH6LW/KH7, N6DPH/DU2, OA4ARQ/HK5, SM0MLL/C9, T2AGD, T30CB, VP2MO, YB2SV, YJ8TT

15 METRES
T30CB

20 METRES
3B8SJ, 5H3BH, 7X4AN, 9X5PP, A71AD, A92P, AH3AC, FB8WG, FG7BT/M, GD3KHE, J6LB, JW7FD, LZ5A, ON4MK/LX, PZ1BK, SM0MLL/C9, T30BK, T30CB, T32AB, VK0AN, WB1HAI/KG6.

CW SWLing with ERIC, L3 0042

10 METRES
N0ZO/DU2, HG5A, JA1OLX, JA0RUG, T2AGD, VQ9GD, W7MCG, ZL1AMO, ZL2BGV, ZL3FX.

15 METRES
VB2A, N6DPH/DU2, DX1F, EA3AQS, FK8DP, HL5OC, KC6INS, KH6OZ, KX6OS, UK9MAA, VU2GJS, YB4YB, YC2BDJ, YC5AR, YU3EA, ZS6BIM, 9M8NL.

20 METRES
EA3AWO, EL0AX/MM, FK8KAA, FO0TM, FR7BP, G5RI, IS0AGP, KG6RT, KP4BJD, OK3AL, T2AGD, T32AF, EK0K, UA0KAW, VP2MM, VP9GK, VQ9GD, YB5AES, YJ8TT, YT3L, ZB2EO, 9Y4VU.

30 METRES
DJ0GF, EA4AXW, DL7AEA/EA6, F6FGN, G2RF, GD4BEG, GM3MXN, HB9DX, JA6PJJ, OE1GPU/3, OK2KOG, DJ8NY/OZ, PA0RVR, VE1ZZ, VE2DC, VE3LSK, VK6NM/MM, VP2MIX, YB5AES, YU3DA, DL2GG/YV5, 6Y5FS.

40 METRES
C21NI, C30CB, C30LM, CO2JY, DL8AN, EA3EF, FK0TAA, FO8FW, G3FXB, HB9AHA, I1UNO, HK0BKX, JH1HVF/JD1, KC6SX, KG6RT, LZ1KSN, OK1TN, SM0GNU/OH0, TI2DLK, UK2GJL, UL7PGA, UQ2GFM, VQ9GD, Y54UL, YU3MY, YV1AOT, 3D2DX.

80 METRES
DF1JN, HK3YH, JA7FUJ, KV4CI, OK4AWQ/MM, OH1TN, ON7KD, SM7BIC, UA3ZFN, VK9NS, W2QD, N4ZG, K9AJ, YB5AES, YU3MY, YV1NX, YJ8IND, ZK1DX.

160 METRES
VKs 2BRA, 2DSG, 4XA, 5KL, 5UD, 6HQ, W7TJ.

QSL'S RECEIVED (AUGUST) —

CN8AT, DL0IGI (10m beacon), ON4VJ/LX, 8J5SUN, 8J1RM, KP2A/KP1, PY3CFD, RK2ABC, RG6G, VQ9CW, ZS6BSZ, 4X4FU, 8P6AU.

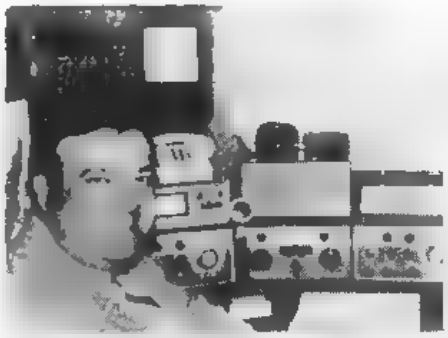
QTHs YOU MAY NEED

C21NI, Box 29, Republic of Nauru.
FK8BLI, Box 2448, Noumea New Caledonia.
FK8EJ, Box 672, Noumea New Caledonia
FO8FW, Box 5006, Papeete Tahiti.
HI8LGS, Box 1157, Santo Dominico Dominican Republic.
HP1ANE, Box 7407, Panama City Panama ZIP5.
KA6NFL/KH0, Box 209, Saipan CM96950 West Pacific.
T30DB, Box 494, Betio Tarawa Kiribati Central Pacific.

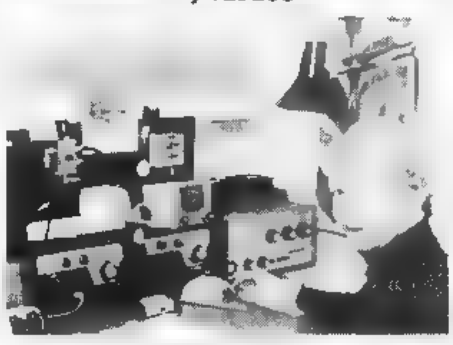
QSL MANAGERS

4U1ITU April 13-17 '82 *(DF3ZE)*, 4U1ITU WPX SSB '82 *(OH2BBM)* 4U1ITU July 29-31 '82 *(DJ8NK)*, 5H3BH *(SM0EAI)*, 9L1FC *(W0CAE)*, 9N1BMK Jan/March '82 *(JA8BMU)*, AA6AA/3B8 *(AA6AA)*, AH2AI *(WA3HUP)*, C21NI Jan 25-26 '82 *(PA0GMM)*, FC0ZN *(DJ9ZB)*, JY1 *(WA3HUP)*, JY3ZH *(DJ9ZB)*, TYA11 April 10-16 '81 and July 9-19 '82 *(W2TK)*, TYA11 all others *(ON5NT)*, VK9CCT/VK9Y *(VK5QX)*, VK9CGT/VK9Y *(VK5QX)*, VK9YA *(VK5QX)*, VK9YB *(VK5QX)*, VK0DX *(VK7LG)*, VK0JH *(VK3DJV)*, VK0RH *(VK3FR)*.

Faces Behind the Key and Microphone



Garry VE3GCO



Gunther DK2WH

Heard Island Update

FROM VK6NE

PROFILE OF AMATEURS UNDERTAKING THE GRUELLING TRIP

VK0HI ::: DAVE, VK3DHF, ex VK9ZD. Leader of our DX group, with experience on Willis Island, and in the Antarctic Regions. Experienced technician, meteorological observer and photographer. Presently employed as a Technical Instructor with the Bureau of Meteorology.

VK0CW ::: ALAN, K8CW, ex W8BDO, W5ODJ, K8CW/KH6. Alan comes with top recommendations from the USA. Has excellent operating techniques, a mechanical engineer by profession who will ensure our generation equipment keeps functioning at "contest" pitch.

VK0MD ::: CHUCK, N4BQW. Vast experience in internal medicine, specialising in the sports area. Prior to commencing private practice was Chief of Sports Medicine and Team Physician at Iowa State University.

EXTRAS

Also accompanying the mountaineering team at the advance base will be another doctor, possibly an amateur. The mountaineers are a very competent group. Some of the activities have included Himilayan and New Zealand climbing. Even the climbing of Bass Pyramid has been attempted and conquered by this group. A recent article in an Australian-wide newspaper, showed the two convenors of the Expedition, abseiling down the Gap in Sydney. The article went on to explain what the group intends to do while on Heard Island. Great publicity.

ANACONDA II

The maxi Yacht, Anaconda II, will be carrying the men, woman, and around two tonnes of equipment. Remember, they have to be fully self-supporting for three months in a very hostile environment. Since being launched, in the early 70's, this vessel has sailed approximately 150,000 nautical miles, including two circumnavigations of the world.

The yacht's most recent trip was participation in the Rio de Janeiro Yacht Race, which led her through the "roaring forties", into the Southern Ocean and around Cape Horn — a fitting trial for the expected conditions that lay ahead.

The magnificence of this vessel cutting through the water is a sight to behold with its overall length of 84 feet, beam of twenty feet and towering main mast of 98 feet. This is complemented by the mizzen mast which is some 74 feet high and a sail locker second to none.

This vessel is motorized with a 135hp diesel, a fuel capacity of 1600 litres, it's cruising range is quite extensive. Electronic equipment carried includes modern radio, radar, depth sounder, telephone, satellite and terrestial navigation equipment, complemented by access to two offshore computers.

Australia's claim to Heard Island is rather tenuous with some countries disputing our sovereignty over it. As the Expedition's operation will include some work on behalf of government departments, as well as including, by invitation, a Government Officer that will carry out scientific studies, it should help to reinforce our claim.

From the concept of the expedition, safety of all personnel has been of paramount importance. Every aspect of the operations of both the base camp at Atlas Cove and the advance camp at Spit Point has been considered. We now have Richard Priddy, an Australian qualified Antarctic medical officer, joining the mountaineering group.

But back to Amateur Radio:

HEARD ISLAND ON SIX METRES

Right from the days of spark and crystal, amateurs have done the impossible.

So, who will be the first to score a contact on "6" with VK0HI. Dave has given an assurance that he will have a station operational and a beacon will be setup using a Kenwood TS660 Transceiver, this with the aid of a Keyer designed and built by Gil, VK3AUI, will be capable of transmitting six and listening on ten metres.

This unit has been built and tested with the transceiver and it is capable of having both the six and ten metre frequencies independently set. The ten metre listening frequency will be programmed into the six metre CQ call.

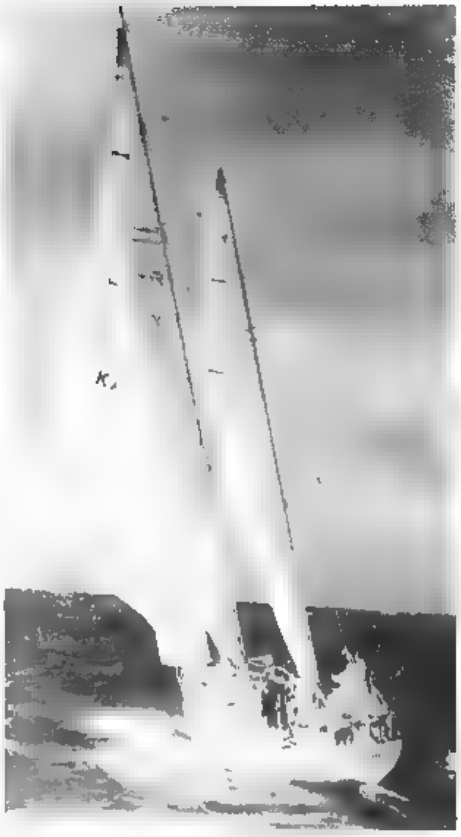
Six metres distance records put Heard Island within reach of many operators. Its no use the "experts" saying its the wrong time, propagation will not be good, an attempt for a new country to be worked will be made.

One aspect has crossed our minds about interference and pirate operations. Heard Island is so remote and isolated from anywhere with an amateur population that signals not emanating from the island should not give the true bearing of Heard Island.

The duration chosen should give all amateurs a chance at working this sought-after location. This is not a one or two week hit or miss affair. Sufficient time will be available to overcome some non-operational times. These could be caused by violent storms, rain static, solar disturbances and a myriad of other problems that plague even the best organised expeditions. We hope Murphy hates being seasick and stays at home, leaving our expedition to have a trouble-free three months.

SUPPORT FOR THE TRIP

Support is still coming and a number of organizations have given pledges of some thousands of dollars as well as equipment. We would like to see greater support from the Australian amateur, as this is an Australian organized expedition.



The Anaconda II at sea.

HIE Photo '82

COMMERCIAL SPONSORSHIP AND DONATIONS

Financial and equipment donations from and including Companies and organisations such as DAMART, EXPLORERS FUND MONT, NEW ZEALAND ALPHINE CLUB OUTBOARD MARINE PTY. LTD. PURAX FEATHER MILLS, WILDERNESS EQUIPMENT AND W.L. GORE have been received with sincere thanks.

The VK6 DX Chasers Club would like to thank the following, who have joined as an associate member of the Heard Island Expedition '83, and to the many others who have helped to get us this far.

DONATIONS RECEIVED:

NCDXA US$10,000
WIA VK1 Division $50
WIA VK2 Division $200
(For Equipment)
VK3UX, $10.

ASSOCIATES:

VK3DKH, VK3ZGA, VK6CT, VK6CU, VK6DV, VK6DQ, VK6FS, VK6YL.

The above list does not include associateships taken out by the general public.

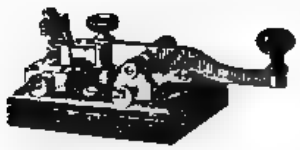
All donations and Subscriptions to

Heard Island DX pedition '83
VK6 Division — WIA,
Box 10,
West Perth 6005 WA

INSERT NOT RECEIVED?

Due to miscalculations, some members did not receive the Heard Island insert last month. If you require a copy please write to the above address.

POUNDING BRASS



Marshall Emm VK2DXP
P.O. Box 362, Goulburn, NSW 2580

THE CW QSO (Part II)

Communicating in Morse can be as quick and efficient as on phone. You might have to think about that for a minute, but it is pretty much true. If you can work CW at a speed of, say, 15 WPM or more, all you have to do is optimize your format and you can convey as much information in as little time as you could on phone. Most of us become hot-air merchants as soon as we key the mike and the apparent goal is to keep an over going as long as possible. Listen to any ordinary QSO on phone and count the number of times you hear the syllable "ah ...". "OK, Fred your, ah, FT101E is doing a terrific job there, and, ah, the dipole sounds real great too. Ah..." Now see how long it takes you to send "FB UR RIG ES ANT" on the key. Admittedly only one word (rig) is spelled out, but we are talking about running a QSO here, not studying or practicing for a DOC exam. Abbreviations are a fact of life, and as long as everybody uses the same ones, they make CW operation faster and more enjoyable.

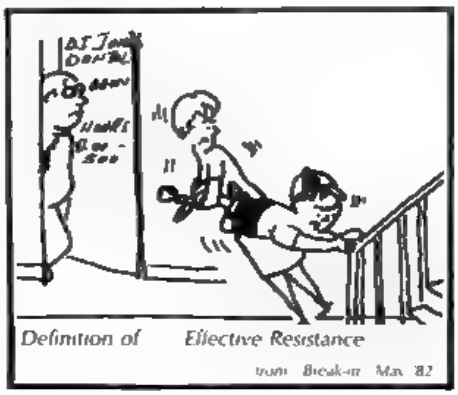
Abbreviations and their usage should be inversely proportional to the speed you are working. In other words, the slower your working speed, the *more* abbreviations are required. If you are working a fellow who can obviously go a lot faster (maybe you followed the 'Golden Rule' and answered his 20 WPM CQ at your own speed of 10 WPM, and he has slowed down accordingly), you owe it to him to cut your transmissions down a bit. Many ops would send "MY NAME IS ARTHUR? ARTHUR BT MY QTH IS GOULBURN? GOULBURN ABOUT 120 MILES SOUTH OF SYDNEY? SYDNEY". Remember that you are a 10 WPM man sending to a 20 WPM man; you sound to him just like a 5 WPM man does to you. All you should be sending is "NAME ARTHUR? ARTHUR BT QTH GOULBURN? GOULBURN ABT 120 MI S SYDNEY". **N.B.** Repeating your name and QTH is more or less mandatory, but takes no longer than phonetic spelling on phone. Also note use of the ? or IMI to indicate that you are about to repeat the preceding word is highly recommended.

What should you say? Well, the old familiar "rubber stamp" QSO makes a very good building block for a CW QSO. You should at least exchange name, QTH, and signal report, and it is also customary to exchange details of rig, antenna, and weather. The order is optional, but common sense dictates that the information should be sent in order of importance. The order given above is a fairly common format, usually taking two overs to get it across. Having exchange the "standard" information, a decision has to be made whether to continue the QSO or terminate it. If you want to continue, you might ask a question about something the other station has sent, or give him your age and occupation. If you want to finish the QSO you should answer any questions you have been asked, thank the guy for the QSO, and end it.

Ending a QSO seems to present difficulties to a lot of ops. You don't want to appear to be rude, but you really do want to make some more contacts. Well, the other guy is probably in exactly the same position, and he'll thank you for ending it gracefully. Once you are sure that all information has been copied adequately at both ends, all you have to say is "OK JOHN TNX FB QSO ES HOPE CU SOON BT FER NW 73 73 ES GL ES GN AR (callsigns) SK". He will respond in kind, and probably finish with "SK E E" to which you may respond with "TU 73 SK E E" after which you will hear his final "E" by way of "Cheers." Nothing to it — certainly no need to make up excuses like "the XYL wants me" or "I better go see if the lower's still standing." No muss, no fuss, and no time wasted.

Next month we'll talk about abbreviations and similar. Till then, 73 ES CU AGN.

- PSE QRS means "please reduce speed to .... (WPM)." PSE QRS 10 gives the other op a lot more to go on than just "PSE QRS."



COMMERCIAL REPORT

Compiled by: G I Sones VK3AUC
Technical Editor
Brenda Edmunds VK3KT
Federal Education Co-ordinator

VSC SOUNDPACER — MODEL C4

The VSC Soundpacer is a cassette recorder with some very interesting capabilities. Cassette recordings of speech may be played back at up to double speed without sounding like a bunch of chipmunks. The interesting thing about all this is that it is accomplished in a cassette unit only a little bigger than many cassette recorders used for dictation or recording business meetings.

The review model was provided by the local agents Hanimex Pty. Ltd. The price class is in the region of $180. This is indeed very reasonable.

The very idea of speeding up replay and correcting the pitch back to normal was only a few years ago almost unthinkable. However recent developments have enabled such processing to be carried out in a small cassette recorder.

The recorder uses standard cassette tapes but an adapter for micro-cassettes is listed as an accessory. Thus it can be used for transcribing dictation with both major cassette types, and would be most useful as it would allow a typist to match the speed of replay to typing speed.

Applications of speeded up replay are numerous such as reviewing lectures, recorded meetings, log tapes, notes etc. Tape recorded loggings can be quickly reviewed or searched.

The speed up is at the price of some reduction of quality and a trace of processing noise but is entirely adequate for speech. Morse loggings were also speeded up but on morse practice tapes the processing noise could be heard which was masked by recorded receiver noise in tapes made off air.

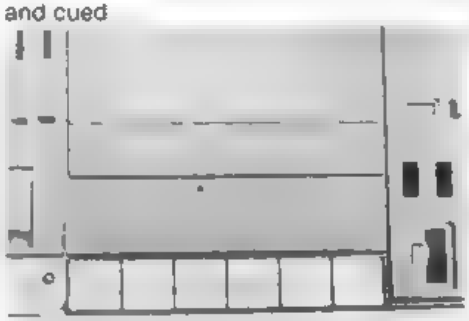
The tapes used in these tests were of DX operations. It was interesting to note that a top DX operator was already speaking at a fast rate. When speeded up a top DX operator was rattling along at a speed which would be the envy of any race caller.

One interesting feature was the ability to use just the pitch corrector without running the cassette deck motor. This is done by feeding audio input into the auxiliary input and taking audio from the monitor ouput.

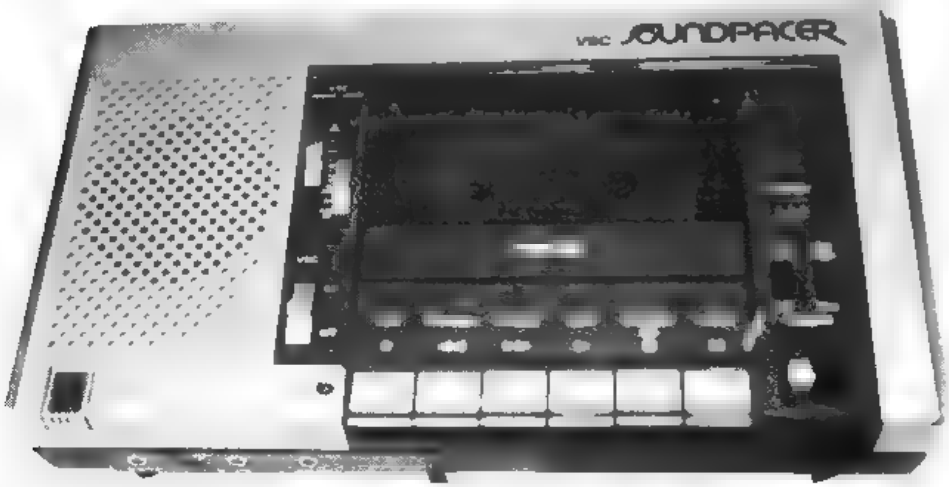
RFI immunity was reasonable with no strange or untoward effects being noticed when the rig was operated at the 100 Watt to 200 Watt level on the 144 MHz, 52 MHz, or 28 MHz with the antennae in any direction. A really hot RF environment was not available as the reviewers tried to get the RF launched rather than crawling around the shack. These bands have been found to find the RF holes in many other pieces of gear including many transceivers in the past.

The recorder operates on 6 volts DC which may be obtained from four "C" size dry cells or from an external adapter. In operation the drain was in the region of 250 mA to 300 mA. Like most cassette recorders premium dry cells or alkaline cells would be advisable.

Operation is very simple with only four extra controls in addition to normal cassette recorder controls. A tape counter is provided to allow taped items to be indexed and cued.



Close-up view of controls.



The extra controls are an on - off switch for the processor, a switch to allow the processor to be used separately, and adjustable slide pots for tape speed and the pitch corrector.

In use, you simply start the tape adjust the volume and then switch on the processor. You must then adjust the speed control and adjust the pitch control to suit.

A short trial using the demonstration recording supplied will enable you to use the speed listening.

Also it is possible to slow down the speed by 20% but the pitch cannot be corrected in this case.

For recording operation is as for any cassette recorder with automatic level control and an inbuilt microphone. The standard external microphone and remote control jacks are provided.

The frequency response is adequate for speech and the main purpose is to provide a specialised speech recorder with the unique ability to provide speeded up playback.

The recorder dimensions are 150 mm deep, 265 mm long, and 50 mm high with a slight allowance for the difficulties in measuring any protrusions.

A most interesting development which offers a lot to anyone having to deal with recorded speech. The ability to move through recorded speech at greater speed is most appreciated by those who have had to deal with it.

As an instrument for variable speed CW practice it is perhaps less efficient. The variable speed is fine but the pitch range is poor. On the tapes tested — DOC sample exams and practice CW from two separate operators recorded directly (i.e. not off air) — the only acceptable quality was achieved with a fairly high-pitch note. As soon as the pitch level is dropped regardless of the speed setting the dahs and later the dits start to break up and become 'spikey'. As it is usually the high frequency response that deteriorates fastest with ageing, many of the older novices prefer a slightly lower pitch which would be very hard to copy on this matchine. The struggling student might be better to spend the extra money on a wider range of tapes at different speeds to be used in a standard player with variable pitch control only.

However there are many interesting possible uses for it in a normal school or college situation.

The VSC Soundpacer was provided by the Australian Distributors — Hanimex Pty. Ltd., 282 Normanby Road, Port Melbourne, 3207. All enquiries should be directed to Hanimex Offices throughout Australia.

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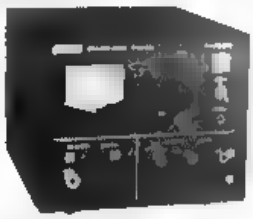

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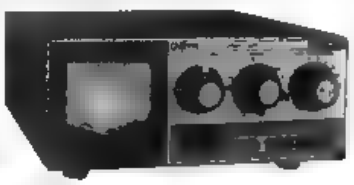

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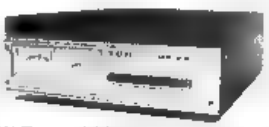

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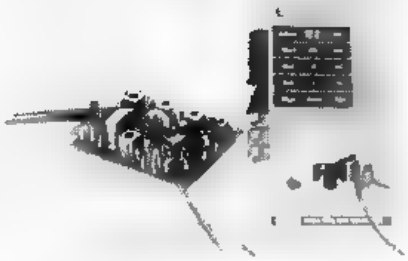
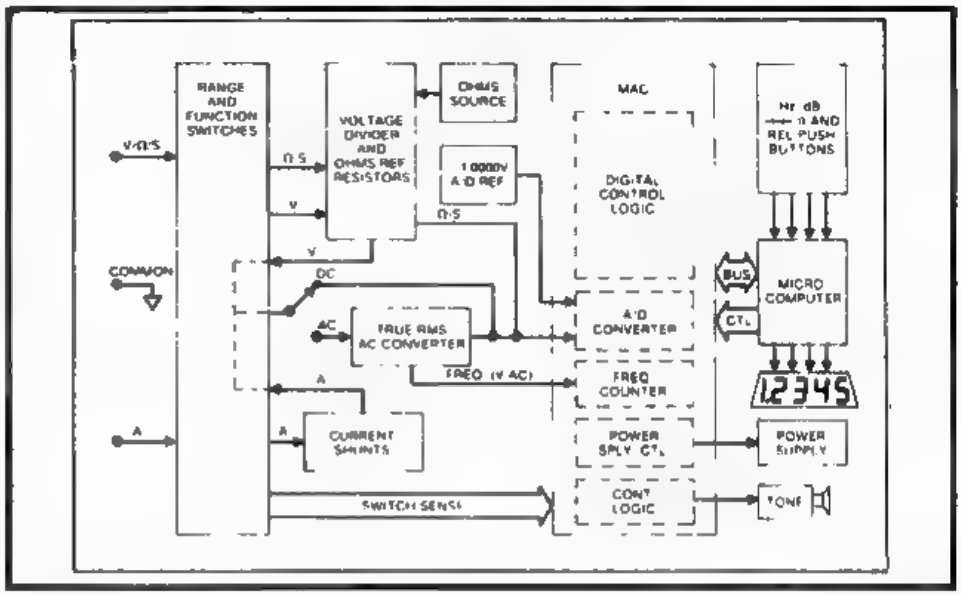
AR SHOWCASE





4½Digit Handheld DMM Measures Frequency

Now a 4½ digit handheld digital multimeter that measures frequency as well is offered by the company that introduced the first handheld DMM in 1977. Engineering and calibration laboratories have relied on 4½ digit multimeters to provide high resolution and accuracy. Today there is a real need for precision high-resolution measurements in the field and shop.

The Fluke 8060A true RMS multimeter is offered to fill this void in handheld instrumentation. The 8060A uses a four-bit microcomputer coupled with custom LSI to go beyond traditional five-function applications. Now, technicians can directly measure output frequencies of touch-tone oscillators and audio amplifier bandwidth with a handheld multimeter.

MICRO AND CUSTOM LSI

Two major components make up the 8060A measurement system: a four-bit CMOS microcomputer and a custom CMOS LSI chip. The heart of the chip is a dual-slope analogue-to-digital converter and a digital control logic section.

Any reading on the 8060A display can be stored as an offset or "relative reference". All subsequent readings are displayed as deviations from the stored reference. This feature is particularly useful when the absolute value of readings is less important than the amount of change.

When the 8060A is first turned on, the microprocessor tests the digital interface and illuminates all LCD elements for 1.6 seconds. Two additional diagnostic tests can be easily initiated by the radio test and a switch decoding test. The ratio test checks the A/D converter for functionality independent of any input circuitry. The switch decoding test indicates if the microcomputer is interpreting each of the eight switches and four pushbuttons correctly.

The microcomputer also monitors the internal (battery) power, and lights a display (BT) when 80% of the battery life has been expended.

VOLTAGE

The 8060A measures dc voltage in five ranges: 200 mV to 1000 V, all full scale. Input impedance, fixed at 10 megohms in all ranges, can be increased to greater than 10,000 megohms in the 200 mV and 2 V ranges. AC voltage measurement capabilities are also found in five ranges, the highest range being 750 volts RMS. Of particular importance is the exclusive, Fluke-developed True RMS monolithic converter which provides accurate voltage measurements of nonsinusoidal waveforms. Displayed ac readings can be in volts, relative dB or in dB referenced to 600 ohms. The 8060A computes these dB readings from the linear voltage reading by a segmented curve matching algorithm. This means of dB calculation is far more accurate than the traditional log conversion which is usually implemented in hardware.

FREQUENCY

Frequency read-outs from 12 Hz to 200 kHz is provided in four ranges which are fully autoranged under the control of the microcomputer. Frequency resolution is 0.01 Hz in the lowest (200 Hz) range and readings are updated at a once-per-second rate. The ac voltage function can be used to verify sufficient voltage (20 mV sensitivity to 20 kHz) for a valid frequency reading. Since the frequency function uses the multimeter front end, frequencies at 750 volts are safely measured.

CURRENT AND RESISTANCE

AC and dc current measurements can be made from 0.01 μA (10 nA) to 2 A in five ranges. Resistance is measured in a ratiometric mode, comparing the external unknown resistance to an internal reference resistor. All resistance measurements from 0.01 ohms to 200 kohms are low power so that resistances can be measured in-circuit. Output voltage is less than 250 mV and will not turn on semi-conductor junctions. In addition to the four selectable resistance ranges, the meter autoranges from 100 kohms to 300 megohms.

The 8060A continuity function is user selectable for visual (LCD) or visual/audible (LCD/tone) indication to allow checking of wiring and PCB traces for shorts, opens or continuity without needing to watch the meter. To check semiconductor junctions, a constant current diode test function is provided. There is even one range of conductance, 2000 nanosiemens. The conductance function, basically an inverse resistance, range spanning from 500 kohms to 10,000 megohms, is particularly useful for making component leakage measurements or checking the conductivity of fluids and solids.

Accessories offered for the 8060A include: high voltage probes, high frequency probes and a variety of cables and adapters. Two optional temperature probes convert the 8060A into a direct reading (C or F) digital thermometer. Power is supplied by a common 9 V alkaline battery (170 hours continuous operation) or optional battery eliminator.

For further information contact Eimeasco Instruments Pty Ltd offices in Sydney, Melbourne, Brisbane, Adelaide or Perth.

NEW HF NOISE REDUCING ANTENNA SYSTEM

The Wandra* noise reducing antenna is a new HF Antenna which has been designed to allow HF Communication from electrically noisy situations, such as city and industrial locations, in which ordinary antennae operate poorly.

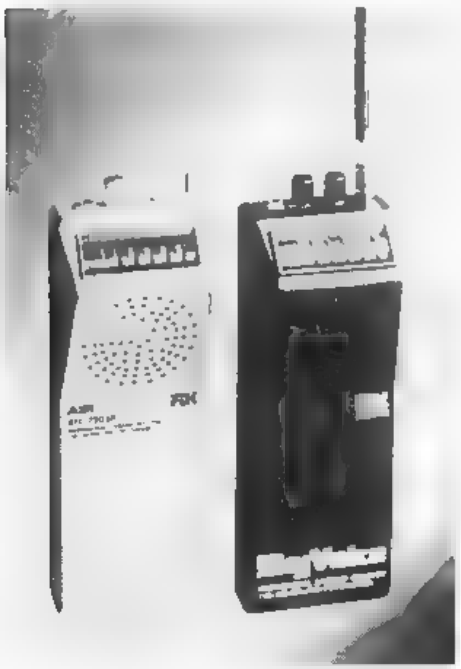
The "Wandra" allows operation on one, two or three frequencies with a preset low VSWR using automatic switching. It is a complete antenna system tuned specifically to the users frequencies and is capable of offering up to 30dB noise reduction.

The noise reduction is achieved by using a unique, carefully balanced crossed dipole radiating system with elements approximately seven metres long. Its noise reducing characteristics are at maximum on the two frequency version and all preset frequencies can be altered if necessary, at a later date, and feed impedance is 50 ohms.

Only one mast is required to mount the 'Wandra' which is an attractive feature for city locations, and it is designed to stand up to natural elements as it is constructed using stainless steel, fibreglass and aluminium.

For further information contact GFS Electronic Imports, 15 McKeon Road Mitcham Vic 3132. Phone (03) 873 3939.

*WANDRA is an abbreviation for West Australian Noise Decreasing Antenna.



AIR BAND POCKET RECEIVER

A new PLL synthesized air band monitor with 720 selectable channels for the VHF air band between 118 and 136 MHz has just been released. The channels are selected by a digital thumbwheel switch.

This compact size receiver is supplied with a flexible rubber antenna, nicad battery pack and an approved AC charger.

The receiver has a lightweight aluminium case, an adjustable squelch level to eliminate background noise and has an extremely low battery consumption which covers at least six hours of continuous operation.

This receiver would be ideal for general aviation pilots, local flying and gliding clubs.

Further information can be supplied from the Australian distributors, Vicom International Pty. Ltd., 57 City Road, South Melbourne. Phone (03) 62 6931 or 339 Pacific Highway, Crows Nest. Phone (02) 436 2766.

NEW MARINE ANTENNA

Model CB135 from Scalar is a new design antenna for the 27 MHz Marine Radio Band. It can be used on all craft whether it be fibreglass, timber or metal, and needs no tuning as it has been factory tuned to cover all 27 MHz marine frequencies.

Comparative tests show the CB135 can be installed in close proximity to metal structures without seriously affecting performance and the entire antenna is enclosed in white tapered fibreglass radome. A white two-way plastic mount is supplied for deck or bulkhead mounting and is adjustable through 90 degrees in either direction to enable the antenna to be lowered for trailing. It is a shorter antenna than most others on the market which overcomes objections many boat owners have of excessive length and inconvenience.

The whip top is demountable from the base to allow for replacement of the antenna section should damage occur.

Performance is not affected by cable length and the cable may be cut or lengthened to adapt to a customer's particular installation.

As background noise, quite often caused by the antenna itself or at least exaggerated by it, can be the difference between hearing or missing an urgent signal, Scalar Technical Department has given special attention to this aspect and the CB135 is extremely quiet in operation.

The new CB135 is available from all Scalar Offices in Melbourne, Sydney, Brisbane or Perth.

WIA INSERTS INTO AR

☆

NOTICE TO WIA ZONES, CLUBS AND GROUPS

WIA Zone, Club and other Group Secretaries are hereby notified that inserts into AR henceforward will be accepted ONLY direct from a Division and then only by prior arrangement with the Secretary.

All inserts must comply with Postal Regulations and must be received not later than the 26th of the month preceding publication date.

Health Hazards from Hand-Held UHF Transceivers?

Jim Button VK2NPA
9 Mulberry Street, Loftus 2232. NSW
From "Dragnet" January 1982

From time to time the question has been raised concerning possible health hazards from hand-held UHF transceivers because the persons using these are in the immediate microwave field from the antenna. This matter was raised in the UK in the context of the UK proposed CB (or "Open Channel") radio service on UHF. In December 1980 the UK National Radiological Protection Board issued the following statement on this matter. The statement is of course equally applicable to UHF transceivers used by radio amateurs.

"HEALTH RISKS FROM 'OPEN CHANNEL' RADIO

Objections have been raised to the UK Government's preferred frequency for a public "Open Channel" radio service (around 928 MHz UHF) on the grounds of possible health hazards. The specific dangers cited are the induction of brain tumours and cataracts in the eyes.

The UK National Radiological Protection Board considers that there is no scientific evidence that exposure to microwaves or radio frequencies will cause brain tumours or other cancers or that there is any evidence which indicates the existence of special hazards from radation in the frequency range 150 to 1200 MHz.

Exposure to very high power levels of microwaves has been shown to cause cataracts in animals and may be inferred to give rise to a similar effect in humans but the exposure must be such as to raise the temperature of the eye by at least 4°C for more than ten minutes. The normal temperature of eyes and body fluctuates daily by about 1-2°C, and possibly more under the influence of physical exertion. For hand-held radio transmitters with total effective radiated powers of less than 3 watts, studies indicate that the temperature rise in the eyes will not be more than 1.0 C when their aerials are held no closer than 1 cm to the face, and the transmitter operated continuously for several minutes. Direct comparisons between hand-held transmitters has shown little difference in the total power absorbed by the head at 150 MHz, 450 MHz and 900 MHz or in the maximum values of the power absorption. There is no reason to expect significantly different results at other frequencies in this range.

There is unlikely to be any direct danger to health from hand-held transmitters used for the 'Open Channel' communication in any part of the radio frequency spectrum, when the effective radiated powers are less than 3 watts and the transmitters and their aerials are kept more than 1 or 2 cm from the head. In the case of mobile transmitters with effective radiated powers of 25 watts it would be inadvisable to place the head closer than about 10 cm to the aerial for any length of time."

SAVE A FORTUNE ON SCANNERS

Why pay $500 or more for a scanning receiver? Dick Smith has them from $285! Get into the exciting world of scanning – it's the latest and fastest growing hobby in the world!

The new DICK SMITH PRO 40 SCANNER

NOW IN STOCK!!!

Compare with similar performance elsewhere at nearly twice the price! The new PRO 40 Scanner from Dick Smith represents the state-of-the-art in computerised scanning receivers!

★ Completely solid state computer-controlled circuitry — no expensive crystals to buy — complete with backup battery for stored frequencies

★ Specially prepared Australian instruction manual (written and produced by our own engineers). Other scanners often have hard-to-understand foreign instruction manuals

★ Touch-type splashproof keypad for direct entry of all operational commands, frequencies etc

★ Ideal as either a base or mobile scanner (operates from 12V — beware of others that don't operate from 12V!) with its own self contained whip antenna or external plug-in antenna

★ Complete with mobile mounting bracket and DC power cable

LOOK AT THESE SPECIFICATIONS:

Frequencies covered	68 to 88MHz — 136 to 174MHz — 380 to 512MHz
Scanning steps	5, 10, 12.5 & 25kHz (depending on band)
No. of channels	40
Power supply	12 to 16 volts DC (battery memory backup 9V)
Scan rate	Approx 1.8 sec

Cat D-2805

AND LOOK AT OUR LOW, LOW PRICE

$399

FAMOUS BEARCAT 20/20 SCANNER

Catch all the action with this incredible receiver! It covers most of the VHF and UHF bands.

Listen to ...

Aircraft, amateurs, pagers, business radio, marine and harbour, UHF CB, taxis and more. Cat D-2810

WHY PAY MORE? ONLY $485

TOP NAME

BEARCAT 150 FB SCANNER

Listen to an amazing range of stations — ones you never get to hear. It's the latest hobby all over the world, and it's now in Australia

You can hear

Fascinating broadcasts, emergency services, taxis, ambulances, security patrols, aircraft, satellites and more

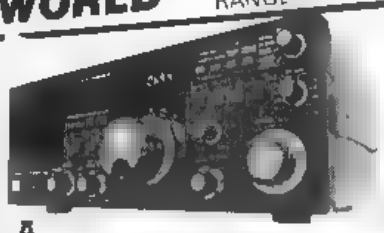
Cat D-2800 **$285**

LISTEN TO THE WORLD

AMAZING RANGE!

WITH THE

FRG 7700SW



If you want the most up-to-date short wave communications receiver in the world, you want the Yaesu FRG 7700SW. Complete short wave coverage with ease of operation others only dream about. Features include timer, optional memory unit, all mode including FM, digital frequency readout with digital clock plus more. Cat D-2841

A LOW LOW **$499**

SPECIAL: FRG 7700 MEMORY UNIT (D-2842) WAS $149.50 **NOW $129.50**

Dick Smith's Australian Radio Frequency Handbook

Enter the exciting world of scanning with this superb book. Covers everything you could possibly want to know about scanning. Watch our ads for further details

SAVE $40!

HORNET II 40 ch AM/SSB

The latest in 40 channel CB technology. The quality of this unit is even better than the high standard set by its predecessor, the Hornet I. our most popular CB ever!

ONLY $239.50

Cat D-1710

DOC APP NO. 24/A00[illegible]

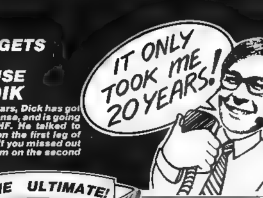
Short wave Antenna Kit

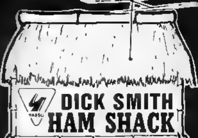
Get the best reception from your receiver with this high quality shortwave antenna. Complete and ready to assemble and needs no soldering. Cat K-3490

ONLY $10.75

DICK GETS FULL LICENSE VK2DIK

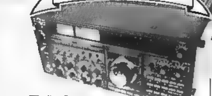
After 20 years, Dick has got his full license, and is going crazy on HF. He talked to everyone on the first leg of his flight. If you missed out — catch him on the second leg.





Dick Smith Ham Shacks are located in the Dick Smith stores listed below. You'll find a licensed amateur at each shack — someone who can talk your language and give you any help you need. (Amateur items also available at other Dick Smith stores.)

THE ULTIMATE!



FT ONE

Top of the line transceiver, it's got everything — SSB — AM — RTTY — CW — FM* — 100W PEP — Built in power supply. General coverage 150kHz - 30MHz. Cat D-2852

*Option

ONLY $1995

SAVE OVER $300!

FT 107M/DMS

A masterpiece of solid state engineering — you only have to take off the cover and look inside to see the care and thought that went into the design. HF WARC band coverage, of course, in all normal modes (FSK included). A massive 240 W PEP input plus all the features you would expect from Yaesu. Great as a base or mobile rig: 13.5V and 240V supplies are built in. Everything you could want in a transceiver. Cat D-2871

WAS ~~$1328~~ NOW $999

FC 107 ANTENNA COUPLER Cat D-2873 $205

EXTRA SPECIAL!!!

TOP 2m RIG FM, CW & SSB

FT480R

The Total Performance machine. You get more than you'd expect. FM, SSB & CW over the full 2 metre band, with 2 VFO's, scanning and more. Cat D-2887

ONLY $485

FT 230R 2m

ONLY $369

Super compact FM 3/25 watt synthesised [illegible] 2 VFO's 10 memory plus scanning. It's out of sight 2m radio! Cat D 2893

FT 208R 2m

SAVE $$$!

FM hand held. 800 chan loaded with features. LCD, 10 memories, scanning, hi lo power, touch tone, memory backup and comes complete with charger and battery. Cat D 2889

WAS ~~$368~~ only $339

DEMO & STORE STOCK SPECIALS — YOU SAVE!!

Making room for new stock - Full 12 mth warranty

Item	Description	Cat No	Was	Now
FT207R	2m hand held ... many left	D-2888	$358	$235
PA7	Mobile charger for FT207R	D-2894	79.95	9.95
SPECIAL OFFER BOTH OF THE ABOVE FOR ONLY $246.50				
FT1D2M	HF 1K all solid state	D-2863		ONLY $850
FT720RVH	2m 25 watt TX scanning	D-2890	449.95	369.95
FT101ZD	Digital readout ... WARC Tx	D-2869	910.00	810.00
FT227RB	2m with scanning 10 watt	D-2891	379.00	319.00
FV707DM	Digital VFO for FT707	D-2896	299.50	265.00
MMB	Mobile bracket for FT707	D-2897	36.00	25.95
	Calibrator paddle	D-[illegible]	only	4.95
FT902D	HF WARC Tx 80 watt	D-2853	1195	995
FT901D	HF 180 watt Tx	D-2854	1075	950
SPECIAL PACKAGE with FT 901D or FT 902D Bonus DC converter (D-2856) while they last				
SPECIAL DEAL FT 902D (D 2853) plus FC 902 (D-2855) plus DC conv (D-2856) for $1195 while they last!				
SPECIAL DEAL FT 901D (D-2854) plus memory (D-2858) included for only $1025 ($1283 value!)				
	DC converter for FT901 902	D-2850	[illegible]	49.00
	Memory for 901 902	D-2858	139.50	99.00
FT101Z(fm)	HF ★ WARC ★ FM ★ [illegible]	D-2872		only 695.00
FT101Z	HF ★ WARC ★ Tx	D-2867	849.00	745.00
SPECIAL DEAL with FT101Z (fm) (D-2872) or FT101Z (D-2867) 101 counter unit (D 2861) FOR ONLY $10!!				

THAT'S AN UNBELIEVABLE $142.50 VALUE FOR $10!! CRAZY DICK!!!

HOT PACKAGE FTV707 (D 2876) plus 2 mtr module (D 2877) for only $244 (that's $294 value!)

LIMITED STOCKS ON ALL THESE ITEMS RING JIM POWELL (02)888 3200 HE KNOWS WHERE ALL THESE CRAZY SPECIALS ARE FROM CRAZY DICK !!!

FL2100Z 1.2kW LIN. AMP

For the amateur who wants to push out a strong signal. Easy to operate. Cat D-2548

VALUE!! $580

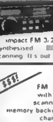
THAT'S LESS THAN 49¢ PER WATT!

FL 2050 2m linear

WAS ~~$239~~ NOW $199

70 watts output for 10 watts input. Great for mobile 13.8V operation. Perfect with our FT 480R and hand helds. Cat D 2547

SAVE $40!



FT 102

NEW

HF ALL MODE TRANSCEIVER

New from Yaesu and Dick Smith. Look at these great features. Unique recessible controls for VOX GAIN, DELAY, MIC GAIN, processor COMP, NB LEVEL, and FM SQL; dual meter allowing much more all around operating convenience; novel chassis design and rugged cabinet construction AND MUCH MORE. Come in and check it out! Cat D-2880

$1225

ANTENNA COUPLER

Power handling capability of 1.2kW. Cat D-288[illegible] $319

EXTERNAL SPEAKER

with special audio filters. Cat D-2883 $72.50

AM/FM PCB Cat. D-2882 $72.50

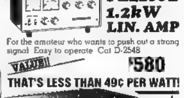
FT 290 R 2m

All mode scanning portable plus LCD plus 2 VFO's plus 10 memories plus hi lo power plus built in antenna plus NB plus memory backup. Cat D 2885

and it's only $349

WAS ~~$395~~

FT707



What a performer packed into such a tiny package! All HF bands (incl. WARC). Check it out! Cat D-2869

WAS ~~$798~~ ONLY $775

V5JR 5 Band Vertical

Virtually unnoticeable in your backyard, this is a highly effective antenna. Covers 80-10m. Cat D-4305 $99.95

The stores at right stock this complete list of Dick Smith Amateur Radio equipment. All other Dick Smith stores stock some amateur equipment but may not be able to give you the service of "Ham Shack" stores listed.

Sydney 125 York St 290 3377 ● **Sydney** 6 Bridge St 27 5051 ● **Gore Hill** 439 5311 ● **Melbourne** 399 Lonsdale St 67 9834 ● **Springvale** Dandenong Rd 547 0522 ● **Richmond** 656 Bridge Rd 428 1614 **Brisbane Buranda** 166 Logan Rd 391 6233 **Chermside** 842 Gympie Rd 596255 ● **Perth** 414 William St 328 6944

A325M/LM

CONTESTS

Reg Dwyer, VK1BR
Federal Contest Manager
P.O. Box 236, Jamison, ACT 2614

CONTEST CALENDAR

OCTOBER

2-3 VK/ZL OCEANIA CONTEST PHONE AR
9-10 VK/ZL/OCEANIA CW AR
10 RSGB 21/28 MHz PHONE
16-17 JAMBOREE ON THE AIR
16-17 ARCI QRP DX
17 RSGB 21 MHz CW
20-21 YLRL ANNIV CW
30-31 CQ WW DX PHONE AR

NOVEMBER

3-4 YLRL ANNIV. PHONE
6-7 ARRL CW SWEEPSTAKES
7 CZECHOSLOVAKIAN CONTEST
13 ALARA'S SECOND CONTEST
13-14 EUROPEAN RTTY
20-21 VK VERSUS THE WORLD QRP CW
20-21 ARRL PHONE SWEEPSTAKES
27-28 CQ WW DX CW

DECEMBER

4-5 ARRL 160m CONTEST
11-12 ARRL 10m CONTEST

ALARA CONTEST 1982

ELIGIBILITY
All licensed operators throughout the world are invited to participate. Also open to SWLs.

OBJECT
PARTICIPATION! YL works everyone, OM works YLs only. One contest (combined phone and CW) run over 24 hours

STARTS
Saturday 13th November 1982 at 0001 hours UTC

ENDS.
Saturday 13th November 1982 at 2359 hours UTC

SUGGESTED FREQUENCIES
All bands may be used. The following are suggested frequencies for easier location of contacts.

CW	PH
28.100 to 28.110	28.480 to 28.520
21.125 to 21.135	21.180 to 21.200
14.050 to 14.060	21.350 to 21.370
7.010 to 7.020	14.180 to 14.200
3.525 to 3.535	14.280 to 14.300
	7.100 to 7.120
	3.570 to 3.590

OPERATION
Phone and CW operation. Each station may be counted twice on each band for credit: once on phone and once on CW

All contacts must be made in accordance with operator and station licence regulations. No net or list operations, no cross-mode. No repeater contacts may be claimed

PROCEDURE
Phone: call "CQ ALARA CONTEST" CW call "CQ TEST ALARA".

EXCHANGES.
ALARA member: RS or RST serial number starting at 001 ALARA member name

YL non-member or OM: RS or RST serial number starting at 001 name

SCORING
Phone: 10 points for ALARA Club Stations contacted (VK2DYL, VK3DYF), 5 points for ALARA member contacted, 3 points for YL non-member contacted, 1 point for OM contacted

CW: Double all points for CW contacts

SWL: 5 points for ALARA member logged, 3 points for YL non-member logged

LOGS
Single log entry. Logs must show: date/time UTC, band, mode, callsign worked, report and serial number sent, report and serial number received, name of operator or station worked, and points claimed

LOGS MUST BE SIGNED. Logs also to show full name, callsign and address of operator, and show final score (points claimed). Logs must be legible, either typed or printed. No carbon copies. No logs will be returned. Decision of the Contest Manager will be final. Logs must be received by the Contest Manager by 31st December 1982

SAMPLE LOG

Date/time UTC	Band MHz	Mode	Callsign	RS(T) & serial No. sent	RS(T) & serial No. recd.	Name	Points
13/11 0135	28	SSB	VK3DML	59001	58028	Margaret	5
13/11 0141	21	SSB	VK2DYL	59002	59037	Geraldine	10

CONTEST MANAGER
Mrs. Margaret Loft VK3DML, 28 Lawrence St., Castlemaine, Victoria, Australia 3450

CERTIFICATES
Will be awarded to the following
Top score ALARA member in each country and VK call area
Top score YL non-member in each Continent
Top score OM in each Continent
Top score SWL in each Continent
Top score VK Novice

1982 VK versus THE WORLD CW QRP CONTEST

Sponsored by the VK CW QRPp CLUB (Member of the WORLD QRP FEDERATION) this contest is directed to all CW enthusiasts WORLD-WIDE who elect to tackle that extra challenge! Contestants may work DX or OWN COUNTRY for scoring!

QRO stations are invited to participate but must submit contest logs with QRP stations only to qualify for the QRO section of the contest.

QRP stations must sign "QRP" for identification

DATES
Saturday Nov. 20 and Sunday Nov. 21, 1982

DURATION
Total of 48 hours (0000UTC Nov 20 to 2400UTC Nov 21)

MODE
CW ONLY

CONTEST CALL
"CQ QRP TEST"

BANDS
160m - 10m (WARC BANDS NOT ALLOWED)

SECTIONS
Station categories
QRP Single Operator Multiband or Single-band
QRP Multi Operator Multiband or Single-band
QRO Single Operator Multiband or Single-band

Period categories
FULL PERIOD 48 hours
HALF PERIOD ANY 24 consecutive hours.

EXCHANGE.
All Stations. FIVE DIGITS RST report plus ARU ZONE NUMBER

SCORING
QRP Stations Indicated output power into antenna NOT EXCEEDING FIVE WATTS .. each contact shall score points based on the following table

0 - 1 watt	6 Points
Over 1 watt 2 watts	5 Points
Over 2 watts - 3 watts	4 Points
Over 3 watts 4 watts	3 Points
Over 4 watts - 5 watts	2 Points

QRO stations using more than 5 watts output to antenna. ONE POINT PER CONTACT (QRO/QRP only allowed)

MULTIPLIERS.
Every contact in a different IARU Zone counts as a multiplier on each band.

BONUS SCORE
Field Stations using battery/solar/wind/hand generated power (motor generators excluded) ... multiply the Grand Total Score by 1.5

CONDITIONS
Stations may be contacted ONCE ONLY on each band Separate log sheets required for EACH BAND Each logged QSO to show: Date/Time UTC Station worked Exchange (Sent/Received) .. Multiplier Power output .. Points claimed

GRAND TOTAL SCORE = Total points from all bands x Total multipliers from all bands (x Bonus Score)

All entries MUST have a FRONT SUMMARY SHEET showing: Calculation of Grand Total Score; Name and Address. Callsign; Signature and Declaration "I certify that all entries in my contest log sheets are true and honest"

Entrants are requested to include a brief description of station equipment and any comments/suggestions Field stations are requested to include a brief description of operations/location/conditions etc

CERTIFICATES
To the QRP Single Operator and Multi-Operator in each Country with the highest Grand Total Score in each section

To the QRO operator in each country with the highest Grand Total Score in each section

To the highest scoring VK CW QRPp CLUB MEMBER IN EACH SECTION

CONTEST ENTRIES TO BE ADDRESSED TO

CONTEST MANAGER .. VK CW QRPp CLUB P.O BOX 109 MT DRUITT N.S.W 2770 AUSTRALIA

All entries must be in the hands of the Contest Manager not later than end-January 1983 Results will be available by end-February 1983 and posted to non-member contestants for 1 IRC (DX stations) or a 27-cent postage stamp (VK stations)

LA Police Use Amateurs

Police officers at Los Angeles International Airport (California) figure if they hamstring up a little they might reduce a chronic problem of automobile thefts

The Los Angeles Police Department (LAPD) is trying a pilot program using Amateur Radio operators as volunteers in surveillance at the airport's parking structures

"What we want them to do is be our eyes and ears" said Lt Paul Wright, commanding officer of the LAPD's airport substation.

If the amateurs see a crime in progress — or even if they just see someone acting suspiciously — Wright says, they will contact the substation and a regular police unit will investigate

"We'll put them on the parking structures." Wright said, "They'll be able to observe the sidewalk areas and into the terminals too, to watch for baggage thieves.

The program has proven successful in Hollywood in the last six months, says Officer Frank Pettinato, an amateur operator who supervises the volunteers there and who will work with the same group at the airport

"Amateur Radio operators have a unique means of communication," he said, "by being able to carry a hand radio around with them"

The amateurs showed their usefulness, Pettinato says during a hostage situation at a Hollywood hotel some time ago

Some of them were on the hotel roof watching the parking lots below, when they heard gunshots and called the police station

Under normal circumstances they would have ended their involvement at that point but Pettinato says the regular police emergency frequencies were jammed, so the officers used the Amateur Radio frequency instead

Pettinato says the amateurs are instructed to use a telephone if possible to call in routine information He says a federal law prohibits the use of Amateur Radio frequencies for "business-type" communication

"But once a crime is in progress they can use their radios" he said

Pettinato says ten amateurs are used at any one time, usually all of them in a one-block area where there has been a particular problem with auto theft or robbery

"We tell them not to get involved in any police action directly" he said "They don't have the power to arrest"

The amateurs first night at the airport was Friday, 31 July *1981* with Pettinato there to supervise He said there would be a two-week evaluation period

During that period we'll go out on weekends," he said "If we can prove we're doing some good, we'll be there on a regular basis"

About 30 or 40 amateurs are involved in the program, Pettinato says, and other areas in the city may use them if the program continues to be successful

Wright, the airport substation commander says auto and baggage thieves "are very difficult to catch

"It takes a lot of time and patience," he said "But if we can use them we won't have to use an officer to just sit and watch for this type of activity

Norm Friedman of Encino California has been working in the Hollywood program since its beginning He was one of the amateurs at the Hollywood hotel during the hostage situation

"It's just something to help the people out," he said "The Police Department is on a closed budget and they can use the extra help." *Reprinted from: World Radio, Oct '81*

Ed. Note: Should Australian Amateurs be directing their talents on a similar note??? Write to me with your ideas.

Bruce, *VK3UV*

The Psalm of Radio

Radio is my hobby; I shall want no other
It maketh me to stay home at night.
It leadeth me into much trouble
It draweth on my purse (What purse?)
I go into paths of debt for its name's sake.
Yea, though I understand it perfectly,
it will not oscillate.
The different kinds of notes, they comfort me
It will not work in the presence of mine
enemies. (Or anyone else)
I anoint the coils with shellac.
But the tube spilleth over
Surely the radio bug shall not follow me
all the days of my life
For if it does, I shall dwell in the house of
poverty FOREVER.

Amen (Anonymous)

LISTENING AROUND

By Joe Baker VK2BJX Box 2121 Mildura Vic 3500

All who engage in the hobby of shortwave radio, be it as a licensed amateur operator, or as a shortwave listener, are linked by a common bond which transcends social and religious barriers, links teenagers to "oldies" and gives us untold joy, whether we are well or disabled. And it brings great comfort to all. The following story will illustrate just what I mean.

A short time before last Easter, some of us on the Cocktail Net were discussing the impending activities of America's Skylab, and speculating on what coverage was being given that event by the Voice of America. I particularly wanted to know the frequencies and times of the VOA coverage, and nobody on the net seemed to know. Unknown to me at that time, a 74 year old shortwave listener Lance Rowe of 48 Webster Street Ballarat, did know and when he heard me give my phone number at the end of one of my transmissions, he gave me a call, supplying the required information. To make that call he had gone out in the very early hours of a wet Ballarat morning to ring me from a public phone, and little did I know at that time that this was the first and last time that I would ever hear Lance's voice.

After this phone call there was months of silence when nothing further was heard of Lance until 23rd of May when I received a letter from Lance's sister Mrs Lola Clark of 10 Gordon Terrace Morphettville S.A. who wrote in part: *"You no doubt will be very surprised to receive this letter from me but I have a sad duty to inform you that Lance died on 29 March."*

"I am his only sister, and found Lance's unfinished letter to you on his desk...."

"I am sorry, I should have written to you long before this, but with the Easter Holidays, Mothers Day and the school holidays, I also felt that I needed a little time to sort myself out also, but although life must go on, I miss Lance very much.

"My husband and self had written to Lance and made arrangements to go over to Ballarat for two weeks as we usually went over once or twice a year. We arrived as planned after lunch on Monday 29th (of March) and thinking that Lance was asleep (in another room), just made ourselves a cup of coffee and set about reading the paper while waiting for him to wake up. However as time passed, I decided that it was time he knew we were there as the afternoon was getting late. But when I went to wake him, I found he was not with us any more.

"(A doctor was called) and the doctor said that Lance had died in his sleep in the early hours of the morning. This was a shock for us but wonderful for Lance as he died peacefully in sleep and living alone we were able to find him so soon after. I now feel that everything was for the best.

"Lance did enjoy your conversations on the air. Sometimes when we have been in Ballarat, I also have listened in to you and 'the boys' as Lance called you all" (Apparently referring to those on the Cocktail Net)

"Lance was a South Australian who settled in Ballarat."

Upon hearing the news of Lance's death, I contacted VK3NIO, Hank of Ballarat, who after a great deal of effort, checked in the Ballarat Radio Club to find if anyone knew about Lance, but he was unknown to members of that Club and did not have a shortwave listener's "L" number. So there was nothing anyone could do. Hank is very upset at the fact that there in Ballarat, living by himself and aged 74, was a shortwave listener, that nobody knew about. Had Lance let one of us know earlier of his existence things might have been so different. Here is part of Lance's unfinished letter to me, which was sent by his sister.

"Now who is this Rowe bloke, you well may ask because hearing from a stranger by phone or letter would be as tantalising as speaking to someone who refuses to remove his dark glasses in conversation or talking from a dark interior through a fly-wire screened door, so I shall open the door wide and let the light in.

"Well, I am a bachelor living alone and am 73 years of age. I do not cultivate many friends - being a bit of a loner if you like - and perhaps a 'snob' - being well satisfied with my own company, and am never, repeat NEVER lonely. I enjoy the company of radio and the friendship one derives from it, both on AM, long wave and SW. Am also a keen reader, abhorring fiction but finding great pleasure in biographies, exploration and history (English, Australian and European with a little Oriental thrown-in) Ballarat provides a marvellous collection of books not excelled anywhere out of Melbourne.

"However, I am not-may I stress, an academic - far from it being just an ordinary bloke who is interested in anything and everything, with a high value placed on, sedentary tranquility and being 'left alone' to do as I please when I please. These pleasures can be indulged in to the full when one lives alone - inconveniencing no one rather to the consternation of some of my delightfully pleasant and".....here the letter ended.

In an earlier part of the letter, Lance wrote "It is a pity that TRUNK-LINING precludes more frequent calls as there are occasions when I would like to have an 'over' but not being an amateur am unable to make contact - sometimes rather frustrating."

Relating to the one and only phone call that I got from Lance, he wrote *"Unfortunately my phone call on the night of the Skylab launching achieved very little because by the time you had told the (Cocktail) group, and I had made up my mind to ring, the craft was in the air and the station had ceased transmission. However, the contact did at least break the ice - a step I had so often contemplated."*

He goes on to say that my signals were always received well in Ballarat and gives details of his own equipment which included a Kenwood R1000. He mentions also having listened to Gordon (VK5HM) and Bronte (VK5KV) many times and goes on as follows.

"Ballarat is geographically placed on a plateau, being 1416 feet above sea level, so that except for a few little lumps and hollows there are few natural barriers between your QTH and my antenna. My set is 'just ordinary' but seems to have roughly the same qualities as the reports given by others to others on the same night.... I am using a long line wire about 95 feet of 7/044 hard drawn copper roughly centre tapped, with a 7/029 vertical lead in, and up at 26 feet at one end and 28 ft 6 at the other. On this set (being all-band) the Americans and England and Europe come in at room strength regularly if the bands are at all open on 20 metres, while 80 metres is never any trouble. In fact even for USA at times, I use no aerial at all if the static is bad beyond about 3 feet 6 or 4 ft of aerial dropped down behind the set after disconnection from a terminal block on the wall. There is however an aerial tuner between the leads and the set."

As Lance Rowe never had a call-sign, one could not say that his demise was that of a "Silent Key" but what a wonderful person he must have been. I wonder how many other shortwave listeners there are out there who listen to us nightly on 80, and have never taken the trouble to let us know they are sitting there by their radios.

Ever since this episode VK3NIA Hank at Ballarat, and myself have been asking shortwave listeners to let us know that they indeed (to use a bit of CB slang) "have their ears on." Hank was a little disappointed at not having had much response until early this morning (24.8.82) but I have had letters from listeners letting me know that us night owls do indeed have an unseen audience.

While I was on the air early this morning 24.8.82 talking to VK5HM Gordon and VK3NIA Hank, my phone rang and I thought it might be my longtime friend Reg Golding in Broken Hill whom I've so far unsuccessfully tried to talk into getting his amateur license. But the phone call was not from Reg but

from shortwave listener L60935 John, of Perth, Western Australia. John said he would like to talk to Hank, and asked me to get Hank to mention his phone number so that John could talk to him direct. I asked John how he had got hold of my phone number which I often give on air to encourage SWLS, but he said he had not heard it on air, but checked my details in the call book against a phone directory and got it that way. No sooner did Hank give John his phone number over the air, than John was on the phone right across Australia to Hank, hence one more friendship via amateur radio has been cemented.

It might be of interest to know that I myself came into amateur radio via CB about 1978 and before getting my first call VK2NIM used to listen to that well known advocate for all things South Australian, VK5HM in contact perhaps with Bronte VK5KV and I made the resolution that as soon as I was able to surface with a call sign VK5HM would be one of the first that I would contact. That in fact did happen. Then Hank, an ex-truckie from Holland began listening to me with Gordon and Bronte and as soon as he got his call-sign, I was one of his first contacts. Now we have John (L60935) over there in Perth who this morning was listening to the rest of us and when he gets his call he will be joining our happy band. IT'S INFECTIOUS — THIS AMATEUR LARK — ISN'T IT? Cheerio for now.

73 Joe VK2BJX

I don't think I can stand the 'Woodpecker' much longer

VK2EBM

"QSY CW? Listen OM I just paid $200 for this microphone."

VK2EBM

HANDS ACROSS THE SEA

What is Amateur Radio? Is it sitting in pile-ups, thumping it out for the elusive DX station, or the dedicated QRPer trying for the Miles per Watt record? Is it the maritime mobiles keeping contact with their loved ones? Amateur Radio is all this and more but the greatest thrill the hobby can give is a personal "eyeball QSL" - the first face-to-face meeting of an old friend of the "airwaves" from the other side of the world.

One such occurrence has happened to me and believe me, its the richest experience an amateur can get from his hobby.

My story starts in 1977, when as a Novice I would make an occasional furtive attempt at working DX on my very rough CW fist (with the aim of increasing speed to upgrade the ticket), and as my speed and "fist" were nothing to get excited about, I found a haven ... the U.S. Novice bands where I found that when I called "CQ de VK2NPI" at 7-10 wpm, I received a reply - gratefully at the same speed not 25 wpm.

I had an answer to a CQ one day which proved to be Dick Brinkman, KA6AHD - also a Novice - and I learned that I was Dick's first DX and his first VK (Dick had worked a lot of USA but not VK), so we ragchewed as much as our limited CW allowed us and made a sked for the next week.

I mailed my QSL card direct (as did Dick) to Simi Valley and we both put a few notes with the card. It appears Dick and I were the same age and with each of us having a young family, each found we had a lot in common.

We made contact fairly often and also corresponded, exchanged a few photos and generally kept in touch. (I might add that Dick only sent photos of his shack!)

The *big* news happened in November 1978 when KA6AHD became N6AYV and VK2NPI became VK2DAB - we both made the UPGRADE in the same month. Now the skeds came thick and fast on the newly shared phone bands and the ragchews grew longer. I felt a great friendship for N6AYV that one only builds up rarely on the air, despite the many great guys one meets on "air".

The chance to meet Dick in person came in October 1980, when, after selling the business I was in, I had a chance to have a short trip to the United States with my family before starting a new venture; so with Lucy (YF) and harmonics Brad (12) and Anita (8) in tow we headed "Stateside" armed with a TR2400 and a FCC Permit, and took on a rush "West Coast" holiday.

The moment finally came in downtown Los Angeles when, after talking "in" Dick on 2 meters I was greeted with what could only be called my double. A short, stout (Lucy and Caroline (Dicks XYL) refer to it as "cuddly"?) bearded guy with a big smile. I couldn't believe it — here was my "airwaves" mate Dick, N6AYV.

We were whisked away to Dick's QTH in Simi and the families got together - the kids exchanging stories, the wives becoming good friends with new-found common interests.

Our stay in the USA was short, but made memorable by the hospitality, the trips here and there, the Halloween dinner we had never experienced before, Caroline's pumpkin pie (we "bake" it "down under"), the trips to the oilfield Simi shacks, the many icy cold beers (a habit which Dick enjoys and VK's are known for) and the general good will generated by the Brinkman family.

Well, we returned home to Griffith and the skeds continued with renewed vigour, and then one Saturday Dick dropped the bombshell. "Pete, I think I'll take you up on the offer. We are coming down to Aussie for a holiday."

At last a chance to return some hospitality and a chance to give Dick a few good Aussie beers and to work a bit of DX "VK style".

Our skeds became more and more frequent until 11 August, and there I was waiting outside customs at Sydney Airport waiting for that familiar smiling mug when I got a tap on the shoulder and there they were - the Brinkmans, old N6AYV himself and Caroline, John (14), Ann-Marie (12), Pete (11) and Matt (7) on VK soil. It was a great feeling.

The three weeks flew. The kids played Aussie games, went to school for a day, the wives talked ladies "talk" constantly and Dick (now VK2DTC) and I worked DX and drank a few beers.

Graeme VK2DGW took the Brinkmans to Canberra (VK1) for a look at the capital and visits to Melbourne, Ballarat and to Maurie VK2NQW's wheat farm but the last days were coming up fast.

The farewell was a very sad one for all of us as our American family left.

Our big happy family of 10 became only four again, even the family dog moped that night. But we'll meet again, in fact every Saturday (almost) we'll trade wisecracks, spin a few yarns, talk about Amateur Radio and most important-we'll "De-Gas an 807" (VK talk for opening a beer) whilst we cement the bonds of friendship that our wonderful hobby can give. Who knows, we might just get up "stateside" again and as my old mate Dick says, "Well, what can I tell ya!"

de Pete VK2DAB

P.S. A good friendship has developed between the Simi Settlers Radio Club and the Griffith Radio Club as quite often, various stations both sides of the Pacific drop in to say a few words. Dick and I are hoping to have an "On-Air" interclub visit between the two clubs with all operators in both clubs having a QSO party with a difference.

Reprinted from World Radio, June '82

INTRUDER WATCH

Bill Martin, VK2EBM,
Federal Intruder Watch Co-ordinator
33 Somerville Rd Hornsby Hts. 2077

INTRUDER WATCHING MADE EASY, OR

HOW TO HELP PRESERVE THE AMATEUR BANDS FOR AMATEURS IN ONE EASY LESSON.

There is no need to ask the question, "Do you wish to preserve the Amateur bands FOR Amateurs?" Any Amateur replying "No" would be a very strange fellow indeed

Why then do you suppose, we have a shortage of written objections to Intruders being submitted to the State Intruder Watch Co-ordinators? The only conclusion I can draw is that Amateurs who are suffering harmful interference from Intruder Stations are not sure how to go about registering their objections , hence the title of this piece ... Now .. what do we do to report an Intruder? EASY — record the particulars of the Intruder just as you would make out a log entry for a QSO (get a bearing, if possible) and send the details to your Divisional Intruder Watch Co-ordinator, whose details appear below. Note that some of the Co-ordinators have been changed We welcome the new State Co-ordinators to the Intruder Watch, and thank the retiring Co-ordinators for their help with their efforts to maintain the Amateur bands for the EXCLUSIVE use of Amateurs.

If you need any help, advice, etc., on Intruders or on Intruder Watching, write to your Divisional Co-ordinator, or to the Federal Co-ordinator Remember that Intruders will not vacate our bands un-aided, and we must give them a little push to see them on their way. The way we can do this is to band together and report the Intruders, via the Intruder Watch, to the appropriate authorities BUT WE MUST DO IT COLLECTIVELY The authorities will not be bothered about spasmodic complaints. But they WILL listen to complaints of harmful interference if they receive complaints in sufficient numbers. YOU cannot shift Intruders, I cannot shift Intruders; .. but WE, together, can shift Intruders **REMEMBER ONE THING** — it is a very slow and tedious business, and we must be patient, and not expect instant results.

Now that we have all attended and digested the one and only lesson on Intruder Watching, perhaps we are now looking for some Intruders on which to practice. I was rather hoping that this would have occurred to you by now OK .. Try 21.115 MHz at 0600, 0800, 1000 UTC and tell us that you heard a CW station (A1A mode) calling himself F9T, and sending either QRU, and nothing further, or QTC, and a coded message

OR ... try sending a report on Radio Tirana, (Albania), which can be heard on 7.065 MHz, sometimes even in English

There is even Radio Peking on 7.095 every evening, just waiting for someone to report him

Do you know that you can obtain a cassette tape demonstrating all the radio modes by sending a blank C90 tape to the Federal Intruder Watch Co-ordinator? This is an interesting tape, and, Intruder Watch notwithstanding, is useful as a matter of further education to the interested Amateur because it contains examples of many of the mysterious signals to be heard on the Amateur bands, some of which you probably have wondered, "What on earth is that?" Right; here's a chance to find out Amaze your friends-in-the-shack by demonstrating your expert knowledge of any signals you may come across in the course of your daily tuning around .. "Oh yes, that is a radio-teletype transmission, with a shift of 500 Hz, or " This particular signal is an Amateur TV station", or .. "Hey — listen to this example of Amplitude-modulated, reduced-carrier multi-channel, voice-frequency telegraphy" (R7B mode) Be an INFORMED Amateur Know your modes by ear. Know you're listening to an INTRUDER And with all this you can help the Intruder Watch, whose SOLE existence, after all, is to help all the Amateurs (including those around the world) enjoy their hobby without the frustrations of aborted QSO's caused by nuisance Intruders

It's as simple as this. Amateur Radio frequencies FOR Amateurs. Here's where you can send your reports

VK1	Mr F Robertson-Mudie VK1MM Box E288 Canberra, ACT, 2600
VK2	Mr Bill Martin, VK2EBM, 33 Somerville Rd., Hornsby Heights, NSW 2077
VK3	Mr F.S. Gardiner, VK3VAV 1 Pine St., Kinglake, Victoria, 3175
VK4	Mr. A.G Loveday, VK4KAL, Rubyvale, Queensland 4702
VK5	Mr Colin Ralph, VK5KCR, 14 Andrew St Beulah Park, 5067
VK6	Mr D. Couch, VK6WT, 9 The Grove Wembley, W.A. 6020
VK7	Mr. Jim Davis, VK7OW, 55 James St., Latrobe, Tas 7307
VK8	Mr. H.G.A. Andersson VK8HA, PO Box 1418 Darwin, N.T., 5794

PLEASE HELP WITH INTRUDER WATCHING.

MAGAZINE REVIEW

Roy Hartkopf VK3AOH
34 Toolangi Road Alphington 3078

(G) General (C) Constructional (P) Practical without detailed constructional information (T) Theoretical (N) Of particular interest to the Novice

QST June 1982.
Slow Scan Color TV (G) 6 metre receiving converter. (N) Low Noise 1296 MHz preamps. (P) L-C Oscillator (N)

ORBIT Feb 1982.
General Amateur Satellite Information (G)

73 Magazine Sept 1982.
Cheap Satellite Receiver (P) RTTY Modem (P) General RTTY Issue

CQ June 1982.
Special QRP Issue

MICROWAVES.
Although the situation is beginning to improve there has been, in the past, very little information in amateur magazines about the recent explosion of technology in the microwave spectrum. One magazine which reveals the state of the art is a trade magazine, "MicroWaves" from the Hayden Publishing Co. in America Miniaturisation and integrated circuits completely changed general electronics and now they are doing the same for microwaves. With components the size of a pin head and lead lengths a fraction of a millimetre the problems of parasitics, strays and mismatches etc become minimal and achievements impossible a few years ago, are now routine A compact solid state system at 94 GHz. GaAsFET amplifiers with 20 dB gain at 40 GHz with 1 Watt output. Varactor tuned oscillators in a TO8 case which sweep 1 GHz in the 2-10 GHz range with 10 Milliwatts output. (I have some and they really do work!) At present most of the devices are expensive but remember the first op-amps twenty five years ago which cost about 100 dollars. Now they are 30 cents The same will happen with microwaves. It may well be that soon the television aerials will all disappear and be replaced by dishes (metallised plastic, available in all the supermarkets) which will provide the average household with radio television, videophone, databanks and everything else from the local satellite And even, maybe, a mobile, gyro controlled dish built into the roof of your car!

Roy VK3AOH

AX PREFIX

Don't forget you can use the prefix AX instead of VK for the period

15th AUGUST 1982

to

15th OCTOBER 1982 inclusive

to mark the occasion of the Commonwealth Games in Brisbane.

VK3 WIA NOTES

David Johnson VK3YWZ
62B Naples Rd., Mentone 3194

This month we are presenting the first of a series of articles informing new members, and older members with over-stretched memories, of various Institute activities and services. We will also include items of general interest and guidance.

QSL BUREAU OPERATIONS

The VK3 Division QSL Bureau is divided into two sections:-

The Inwards QSL Officer is Mrs Barbara Gray VK3BYK, 1 Amery Street, Ashburton, 3147 (Phone 25 1885)

The Outwards QSL Officer is Mr Des Clarke VK3DES, c/- 412 Brunswick Street, Fitzroy 3065 (Phone 417 3535) (Home 870 6550)

These services are provided FREE to **Financial Members** of the W.I.A. Victorian Division. Please observe the following conditions

OUTWARDS OPERATION:

1. QSL cards are sent to other QSL BUREAUX only.
   QSL cards for countries without a QSL Bureau will be returned via the Inwards Bureau
2. QSL cards should NOT exceed 140mm (5½") x 90mm (3½"). Oversize cards will be returned via the Inwards Bureau
3. Call sign of recipient station to be printed on the rear of the card in the top right hand corner

   If via QSL Manager, note as follows:
   e.g. HT2XZ via W6NA
4. Cards must be sorted in Prefix alphabetical order except U.S.A. and Australia.
   These countries have different Bureaux for each Prefix Number, and should be sorted numerically irrespective of Alphabetical Prefix. USSR, Japan and Canada have a central Bureau for all cards, therefore sorting of cards for these three countries is not necessary, but would doubtless assist the destination QSL Bureau.
5. All cards to be posted or delivered to Outwards QSL, W.I.A. Victorian Division, 412 Brunswick Street, Fitzroy, 3065. Accompanied by your CURRENT 'AR' address label.

INWARDS OPERATION:

Cards can be collected in three ways.

1. By calling by prior arrangement at Barbara's QTH. Please phone at a reasonable hour
2. By sending STAMPED, addressed envelopes to Barbara. (Minimum size envelopes 7" x 5")
   Be sure to include YOUR own call-sign on each envelope
   Postage at this time is 30c for about 15 cards or 45¢ for 30 cards
3. Collect by prior arrangement with Bruce VK3SO at Victorian Div's on Office between 10.00 a.m. and 3.00 p.m. weekdays

NOTE: Incoming cards will be kept for twelve months only

Victorian Division WIA Western Zone Convention 1982

VICTORIAN DIVISION WIA WESTERN ZONE CONVENTION — 1982

Location: Ballarat. The garden City

Host Club: Ballarat Amateur Radio Group

Date: Weekend Saturday 30th October Sunday 31st October 1982

Venue: Sebastopol Football Club rooms. All accommodation is the responsibility of those attending.

PROGRAMME

Saturday: Talk-in, registration, Talk-in Ch6750R and 3.585MHz. Official dinner at clubrooms (7 p.m. sharp)

Sunday: Trade display, competitions, BBQ lunch, novelty events, tea and coffee supplied

Information available from the Secretary Mr. Jim Wright VK3VZD, P.O. Box 216E Ballarat East 3350. Tel (053) 32 7563. Closing date for dinner reservations is October 15th

FIVE-EIGHTH WAVE

Jenny Warrington VK5ANW
59 Albert St., Clarence Gardens 5039

NOTES MISSING:

We must apologise for the non-appearance of this column in August A.R. It was written by our President, Bill VK5AWM, and no-doubt would have made very interesting reading had it not gone astray. It looks as though you will be stuck with me for a while yet, as Bill is taking over the job of Editor of our local 'Journal' until we can find a suitable volunteer (don't all rush!) Those that miss out on this great opportunity will head the 'Short List' of Volunteers to write this column!

ELIZABETH ARC:

One of the things that I believe was in Bill's column, was news of the Elizabeth A.R.C. This club would have to be one of the most active and enthusiastic in the State. In three consecutive weeks they had, a weekend Hamfest, the opening of their new club rooms (see Feb. AR), and their A.G.M. More than one hundred and fifty people attended the opening of the Water Tower, in glorious sunshine, on Saturday 7th August. Bill Wardrop, as divisional President performed the opening ceremony. Tony Cooling VK5KNC the President of the club, spoke on the current activities of the club; and John Mitchell VK5JM, our immediate past President and a founder member of the Elizabeth club, spoke on the formation and early history of the club. The original minutes were read by their current Secretary Eddie Cooling VK5ZE. I was pleased to be invited to represent Federal Council, and happily didn't have to make a speech. I realised too late that jeans would have been more suitable for climbing the 'fire-escape-type' stairs than a dress with side splits, but it was worth the climb to see the amount of work that has been put into the first two floors. The Amateurs of S.A. seem to have a decided taste for strange buildings, or perhaps we see the potential in buildings that no-one else wants, divisional headquarters was an incinerator, and now Elizabeth has it's water tower. Both buildings have the advantage of height, but the disadvantage of not being able to be structurally altered. However this hasn't deterred the club members, whose current lack of funds seems to have been compensated for, to a large degree, by their ingenuity and enthusiasm. After the formalities we were entertained to a display of marching and rifle drill, by the Air Training Corps; and last but by no means least a delicious afternoon tea was served. I believe those that could stay on, enjoyed a barbecue later. I would like to thank the Elizabeth Club for a most enjoyable afternoon, and wish them every success in their venture.

BUY AND SELL

At our July meeting (which was a 'Buy and Sell'), it was moved that in future 'Buy and Sell" meetings will not be held on normal meeting nights, but on the fifth Tuesday in the month where one occurs. This means that next month we shall have our General meeting on Nov 23rd, our Buy and Sell on the 30th, and our Christmas Social on Dec 7th (bring the YL or XYL, and a plate of supper) and don't forget that it will be in the Thebarton Assembly Rooms on the corner of South and Henly Beach Rds. Also, don't forget the picnic at Bridgewater Oval on Sunday 21st Nov — bring the whole family and your lunch. Interstate visitors are also welcome to any of these venues. (shout for help on repeaters 5 or 8)

This month's meeting will be the ever popular 'Display of members' equipment' at 8.00 pm in the Burley Griffin Building, on Tues. 26th Oct. QSL cards, E.S.C., and Publications available from 7.30 pm

VK4 WIA NOTES

K. B. Pounsett VK4QY
33 Lasseter Street, Kedron, Qld. 4031

COMMONWEALTH GAMES STATION

It has taken time but approval has now been granted for the W I A to operate station AX4QCG at the Brisbane Commonwealth Games main stadium grounds at Nathan, Brisbane Due to a variety of technical requirements, our site location at QEII requires that the station be located in a caravan, and transmissions be made on the 70 cm band, with a remote re-transmitting station being located at the home of Geoff, VK4ANP at Woodridge.

At Geoff's QTH we will have a remote control box designed by Geoff VK4AG controlling the operation of two HF transmitters, either one being in contact with QEII by UHF, The HF frequencies for contact will be as follows.

80m - 3.580 MHz LSB, 40m - 7.085 MHz LSB 20m - 14.342 MHz USB, 14.065 MHz CW, 15m - 21.380 MHz USB, 21.175 MHz USB, 21.135 MHz CW 10m - 28.535 MHz USB, 28.200 MHz CW.

The station will also be operative on the WICEN repeater, 147.150/ 750 MHz. Wherever possible, the above frequencies will be used, and it is anticipated that the station will be operative from Thursday 30th September until Saturday 9th October, during the hours 0000 to 1300 UTC approximately Any amateur contacting AX4QCG will receive a special QSL card, but please — NO RETURN QSL.

WICEN IN QUEENSLAND

Here in the sunshine State Wicen is very active Apart from other unforseen possibilities, cyclones are a real threat to lives and property along our entire coastline, from the Gulf of Carpentaria, all the way south to Coolangatta on the Gold Coast

Ken Ayers VK4KD, is the State WICEN Co-ordinator Ken has been very busy organising our emergency network throughout Queensland and has recently held a very useful mobilisation exercise in the south eastern part of the State Another recent exercise was held in conjunction with the BP Road Classic, a relay run involving teams starting from several different centres in South East Queensland

Two more message handling exercises are planned for this month One of these will cover communications for the Commonwealth Bank Cycle Classic on 11th October an International event over a Sydney-Brisbane route Queensland WICEN is responsible from the NSW border to Brisbane section

Over the weekend of the 15, 16 and 17th October, safety communications are being provided for the Warwick to Nerang Horse Endurance Trials This is a gruelling event over some very rough and dangerous country

So with all this activity by the WICEN members, the cyclone season will be, perhaps, just a routine matter, after all that is the reason for all these exercises, isn't it?

ATTENTION ALL RAILWAYMEN

The Queensland Institute Amateur Radio Club has been formed The first meeting took place at Ipswich on 15th August

Noel Wells, VK4NB is President and Dennis Breitkrentz, VK4KEW is the P R man If you are a railwayman, you are invited to join the net any Wednesday evening at 0900 UTC on 3.580 MHz VK4KEW is the net controller

SLOW MORSE

The first of September saw the beginning of the slow morse practice programme under the guidance of the Townsville Amateur Radio Club Several clubs are participating in this programme, each being responsible for a particular night or nights The frequency to listen to is 3.535 MHz.

ROYAL FLYING DOCTOR SERVICE

This service, which is so important to outback Queenslanders, had a most interesting historical item on their stand at the recently held Brisbane Exhibition (Royal Show in other States)

On display and operating was a relic of bygone days in the shape of a morse code machine. Looking somewhat like a typewriter, it sends characters at about 10 WPM on pressing the appropriate keys. Because of such lower power from pedal wireless sets, CW got through when phone failed, as it still does today Unskilled people could type out the message on the key board, it would be copied by an operator at the base station who would then reply on phone, using high power

So just for once, the professionals were ahead of the amateurs in morse machines.It has taken the amateur fraternity about 50 years to get the same idea

Bud VK4QY

ALARA

AUSTRALIAN LADIES AMATEUR RADIO ASSOCIATION

Margaret Loft VK3DML
28 Lawrence St Castlemaine 3450

Last night on the 7th Birthday net for ALARA 18 members joined in from VK2 3,4,5,6,7, and Pearl ZL2QY one of our DX members Best wishes to ALARA were extended by all on frequency and the successful continuation of our group

Sorry to hear of all the victims of the flu virus raging at present, it is a nasty strain and really takes some shaking off We have all had it so know first hand

The exams are over again successfully I hope for all candidates Please let me know your new callsigns so they can be included in this column We like to share in your achievements.

It has been suggested we compile a list of all licensed YL's and would like to hear from you if you have a call sign, aim is to have a list of calls and names This will be printed in ALARA newsletter and if we hear you on air will know who you are It also gives us an idea of the proportion of YL's to OM's now and also the percentage who have joined ALARA.

This month I received a letter from Akiya JH1GMZ the International Chairman of JLRS They had the 25th anniversary of JLRS on 24th 25th July in Tokyo One hundred and thirty members and thirty five friends and OM's attended. At their first convention in 1957 they had twelve YL's as members. now their membership is four hundred and sixty. Certainly a very impressive achievement in twenty four years

Congratulations to member Sue Brown VK2BSB on your appointment as President of the VK2 division of WIA, a first in the history of the Institute

REMEMBER THE CONTEST on SATURDAY 13th NOVEMBER 1982 from 0001 to 2359 UTC FREQUENCIES as per contest column of AR and associated magazines Please join in and ensure its success I look forward to meeting some of you I will be using the club callsign VK3DYF for the contest So hope to hear you

All the best to all of you until next month good health and enjoy your hobby

33,73,88

Margaret VK3DML

STOP PRESS

ARIANE ROCKET L5 was not carrying an amateur satellite when it failed to get into orbit after launch on the 10th September L6 is scheduled to carry Phase IIIB amateur satellite and it is now assumed that the program will be considerably delayed

BOB VK3ZBB

VK2 MINI BULLETIN

Athol Tilley VK2BAD
PO Box 1066 Parramatta
NSW 2150

NOTE OUR NEW POSTAL ADDRESS:

P.O. BOX 1066, PARRAMATTA 2150

OUR OFFICE IS NOW LOCATED AT:

109 WIGRAM STREET PARRAMATTA

PHONE: (02) 689 2417

LISTEN TO BROADCASTS FOR FURTHER DETAILS

*** Please note phone no. amendment. It was incorrect last issue.*

COUNCIL REPORT

The new headquarters of the Division at 109 Wigram Street Parramatta were the venue for the Council meeting held on the 13th of August

Federal WIA advised that Bill Martin VK2EBM had been appointed as the new Federal Intruder Watch Co-ordinator Bill will continue to act at the VK2 Co-ordinator and, on behalf of members Council congratulates him on his new appointment and thanks him for his dedicated work.

Athol Tilley VK2BAD reported on the establishment of the office at Parramatta and progress on the work to install the office partitions and fitting out the library and members lounge area Susan Brown, VK2BSB reported on her discussions concerning the Division's responsibilities as to income, sales and state payroll taxes Steve Pall VK2PS, presented recommendations for upgrading the Division's insurance policies and it was resolved that the Public Liability cover be increased to $1 000 000 A new plain paper photocopier and two filing cabinets were purchased for the office.

Marshal Emm VK2DXP advised Council that he was unable to continue as the Division's Slow Morse Supervisor due to his transfer to South Australia Members will be aware of the vital role of the slow morse service and the dedication of the operators. Although Marshall has held the position for a relatively short time, he has demonstrated his enthusiasm in many ways. In particular the survey he conducted to find out if the existing format was suitable and what changes were desired by the users of the slow morse service Council and members of this Division wish to thank Marshall for his work and wish him success in VK5 Ross Wilson, VK2BRC, has offered to act as Slow Morse Supervisor Congratulations Ross and our appreciation

An offer from Aub Topp VK2AXT, to assist the Division was accepted and Aub is now our new Honorary Library Officer. Council is aware of the considerable job facing him and is thus especially grateful for Aub's offer

Ways of encouraging technical articles in Amateur Radio Magazine were considered Council resolved that the VK2 Division will award annually a first, second and third prize of $200, $100 and $50 respectively to the authors of the best three technical articles from VK2 members published in Amateur Radio The awards will be presented at the Annual General Meeting of this Division, selection of the awards to be made by Divisional Council at its January meeting (NO — Councillors are not eligible!) A suggested name for these awards is being investigated.

An official opening ceremony for the new building was discussed and early February, 1983, is the tentative date

HOMEBREW COMPETITION

Built any home-brew equipment lately? Why not enter it in the competition described on page 58 of August AR and then provide a technical article for Amateur Radio - you might even scoop the pool for awards at the next AGM! Remember that the closing date is the 30th of November, so get your application form from your local Affiliated Club or the office NOW

NEW OFFICE DETAILS

The office of the NSW Division of the WIA is now located on the first floor of 109 Wigram Street, Parramatta and is open between 11am and 2pm Monday to Friday inclusive The phone number is (02) 689 2417. Note that all correspondence with the Division should be sent to PO Box 1066, Parramatta, NSW, 2150 — no other address should be used.

Facilities include the office, library, a member lounge/meeting area and drawers or QSL cards. A roster system is proposed so the building can be open on Saturday afternoon and one evening during the week. When this is finalised details will be on the weekly broadcasts and in this column

7TH CONFERENCE OF CLUBS

The Westlakes Amateur Radio Club will host this important Divisional meeting at its clubrooms in York St Teralba, starting at 10 am on Sunday the 31st of October Will your Affiliated Club be represented? The quorum is twelve Affiliated Clubs. Members of Council will indicate the importance they place on these Conferences by their attendance, as they have done previously

This is an ideal opportunity to present your clubs views and meet the officers of other clubs, as well as viewing the operation of the QSL Bureau. As it is the first Conference of Clubs to be held north of Sydney, the north coast and northern clubs will find travel much easier Teralba is near Newcastle, only a few hours drive for Sydney clubs.

A presentation will be made to the winner of the "Dick Smith Educator of the Year" award An award will be made to the club achieving the highest increase in WIA membership amongst club members since the last Conference You know what was awarded in the past, so attend and see what award is made this year - if your club is not represented you might miss out!

I want to see as many clubs as possible represented at this Conference. Lets all be at Teralba on the 31st of October and enjoy the hospitality of the Westlakes Amateur Radio Club.

JAMBOREE ON THE AIR - JOTA

The Scout and Guide JOTA will be held on Saturday and Sunday, the 16th and 17th of October If a scout group contacts you to run a station and you personally cannot assist them, contact fellow amateurs or the Division Likewise, if you wish to run a JOTA station, let the Division know and we will direct the scouts/guides to you. JOTA is one of the ways to introduce newcomers to amateur radio so please conduct your station with decorum and tolerance - not to forget the regulations.

BLUE MOUNTAINS FIELD DAY - 1982

The annual field day of the Blue Mountains Amateur Radio Club will be held on Sunday, the 14th of November at the Springwood High School Chapman Parade, Faulconbridge. It is expected that all the usual events such as foxhunts, talk-ins, ladies and childrens events will be provided

For details and a program write to the club at PO Box 54, Springwood, 2777

WICEN NOTES

The month of October has a considerable amount of activity for members of VK2 WICEN Over the October holiday weekend WICEN, being a member squad, attended the annual VRA conference From the 11th to the 17th October VK2 and VK4 WICEN will be involved with communications for the Commonwealth Bank Cycle Classic This pushbike race will mainly follow the Pacific Highway from Brisbane to Sydney and the various Regional groups along the way will provide mobile coverage via the area 2 metre repeaters The event is international with twelve teams of four bike riders who will finish at Pier 1 in Sydney on Sunday afternoon 17th October

SIMULATED EMERGENCY TEST (SET)

The Simulated Emergency Test is an annual event conducted across the US and Canada in mid October The purpose of the SET is:-

** To find out the strong points and limitations of the amateur emergency groups and the third party traffic nets in providing emergency communications.*

** To help amateurs gain experience in communications, using standard procedures, under simulated emergency conditions.*

** To provide a public demonstration-to served agencies such as Red Cross, Salvation Army etc, and through the news media - the value to the public of Amateur Radio, particularly in time of need.*

To achieve these a ms the 3rd part networks and the emergency groups come together to make contact with the various welfare agencies and pass messages on behalf of these agenc es

This is a big event with over 12,000 emergency operators and a very large number of Nationa Traffic System operators taking part in most of the act vity during the nom nated weekend. That wil be the 23rd - 24th October this year

What has this got to do with Australian Amateurs? It means that following the establishment of 3rd Party Traffic Agreements between Austra ia and both the US and Canada, Austra.ia has been asked to par-t.cipate n this years Internationa Simulated Emergency Test. As this is our first venture n this area the .evel of Australia s involvement is being kept at a low level so that we can observe and learn and determine whether th s should be a regular part of the Australian Amateur ca.endar.

The activities can be divided into 3rd Party Traff c activities (i.e. messages basically between members of the public) and WICEN act vities (.e. messages basically between agencies)

Most activ ties are expected to be centred on NSW with some WICEN activity in VK1 and VK4

The WICEN activities will involve the Nationa Disasters Organistion, the NSW Police Disaster and Rescue Branch and the various welfare agencies such as Red Cross, Salvation Army, St. Vincents de Paul and Seventh Day Adventist, etc. Area Co-ordinators for these agenc es will be passing messages both within NSW and also to the US and Canada.

Apart from providing further clarification of the respective roles of WICEN and the 3rd Party Traffic Nets, this exercise will also exp ore some practical aspects of WARC reso .t on ' BN" which deals with the use of Amateur frequencies during times of international emergency

ANNUAL CONFERENCE

The Annual Co-ordinators conference will be held this year on Saturday the 30th October at the Westlakes Amateur Radio Club. Teralba

Expanded details of WICEN activities are given on the Sunday broadcasts or the weekly WICEN nets on Thursday There is a Sydney net at 1100 UTC on WICEN repeater VK2RWS 7150 and the HF nets follow at 1130 UTC on 3.600 MHz Included in each net are coming events activity reports and short taped training ectures Those who can report in on the nets will be kept up to date and an invitation is extended to all Amateurs to join in.

(From David Mackay NSW WICEN Co-Ord).

DETAILS OF 3 CLUBS AFFILIATED WITH THE NSW DIVISION

BATHURST ARC
PO Box 755, BATHURST, NSW, 2795

Meetings: 3rd Friday of each month at 8pm at SES Headquarters in George Street, Bathurst.

President: J. Willmott VK2AJX, V-Pres. N Sweetnam VK2DLG, Secretary: N. Wilde VK2DR, others: M. Salmon VK2DLD, J Thurgood VK2BHM, T. Stevenson VK2ZNU.

MANLY WARRINGAH DRC

PO Box 186, BROOKVALE, NSW, 2100

Meetings: Every Wednesday at 7.30pm at old RAAF Radar Station at Beacon Hill

President: G. Aggett VK2ZGD, V-Pres. P Angilley VK2BDF & B. Saward VK2KAD. Secretary: I Dodd VK2DLU, others: M Tremble VK2BIS, R. Grigson VK2RA, J. Blackman VK2KBJ, H. Leykem VK2BHF, R. Clarke VK2BYN, D. Whoolen VK2ZHY

Repeater: VK2RMB channel 6875

ORANGE ARC

PO Box 1065, ORANGE, NSW, 2800

Net: Sundays at 2030 EST on repeater 6700 using VK2AOA.

Meetings: 1st Friday of each month at 7.30pm at Canobolas High School, Icely Road, Orange

Classes: NAOCP

President: P. Carter VK2TK, V-Pres. N Wilde VK2DR, Secretary: R. Wilson VK2BRC, others: R. Alford VK2ZRJ, I. MacArthur VK2NYU, F. Aplin VK2ZFE, V. Marsden VK2EVM

Magazine: Mini Tuned In, published approx. bi-monthly, Editor: R. Wilson VK2BRC.

Repeater: VK2RAO channel 6700

COMING EVENTS

Jamboree on the Air 16th and 17th October

WICEN Regional Co-ordinators Conference at Teralba. Saturday 30th October

7th Conference of Clubs at Teralba. Sunday 31st October

Blue Mountains Field Day at Springwood. Sunday 14th November

Homebrew Competition entries due Tuesday 30th November

NSW members and clubs are invited to submit news items for inclusion in this column to PO Box 1066, Parramatta, NSW 2150. Items for December AR should reach us by October 22

Athol VK2BAD

REMEMBER JOTA

OCTOBER 16, 17

WHEN IS A STATIC CHARGE PRESENT?

You can never be sure if you or the items you are working with has a static charge but small charges up to 100 vo ts are common and large charges up to 35000 vo ts could be present

Examples

A person after walking on carpet
— up to 35000 volts on a dry day
— up to 2000 volts on a damp day
A person walking on a viny floor
— up to 12000 volts on a dry day
— up to 400 volts on a damp day
A person on a padded cha r
— up to 18000 volts
Styrofoam coffee cup
— up to 5000 volts
Plastic solder sipper
— up to 8000 volts at tip
Plastic or scotch tape
— up to 5000 vo ts
Vinyl covered notebook
— up to 8000 vo ts

Electro Static Discharge

- TO FEEL IT — 3500 Volts or more required
- TO HEAR IT — 4500 Volts or more required
- TO SEE THE SPARK — 5000 Volts or or more required

Many electronic components including those in the chart be ow are susceptible to damage from a static discharge Voltages far less than you can fee hear or see can degrade or completely destroy components

ESD Susceptibility of Various Electronic Devices.

Device Type	Range of ESD Suscept b ty (Volts)
VMOS	30 to 1800
MOSFET	100 to 200
GaAsFET	100 to 300
EPROM	100
JFET	140 to 7000
SAW	150 to 500
OP AMP	190 to 2500
CMOS	250 to 3000
Schottky Diodes	300 to 2500
Film Resistors (Thick Thin)	300 to 3000
Bipolar Transistors	380 to 7000
ECL (PC Board Level)	500 to 1500
SCR	680 to 1000
Schottky TLL	1000 to 2500

FROM COLLECTOR & EM TTER APRIL 82

QSP

MEMBERSHIP

The mid-year edition of The Radio Bulletin of the Eastern and Mountain District Radio Club contains a call sign listing of Club members. Of the club membership totalling 511, 293 are current WIA members; all but 25 have Victorian addresses, of that 25 there were 5 in VK2 and 6 in New Zealand.

Cross modulation and spurious emissions on our crowded bands cause headaches to us all from time to time.

This excellent article by Dr. R.W. Ellis will assist all to fully understand the problem and help in the prevention and diagnosing of this common fault.

NOTE This article has been reproduced without alteration The author has used the European practice of a comma to signify a decimal point

NATIONAL EMC ADVISORY SERVICE

Tony Tregale VK3QQ
Federal EMC Co-ordinator
38 Wattle Drive, Watsonia 3087

Practical approach to VHF co-location problems

By Dr R W Ellis*

*Park Air Electronics Ltd. Peterborough, UK

The rapid increase in the use of air transport over the last 20 years, coupled with the need to provide a cost effective and safe service with maximum aircraft utilisation and minimum turn around time has generated an ever growing demand for VHF communication services at airports and en-route stations.

This in turn has given rise to the increased use of communal siting, with a comparatively large number of systems operating on different frequencies in a restricted area.

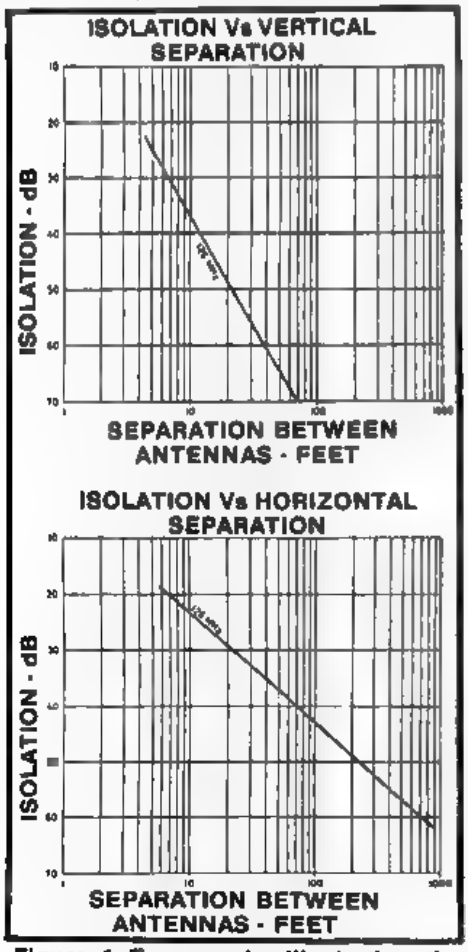


Figure 1 Two graphs illustrating the relationship between vertical separation and isolation and between horizontal separation and isolation.

This proliferation of transmitters and receivers, combined with the use of single frequency simplex working, inevitably has resulted in a considerable amount of interference between equipment located in close proximity. Although equipment design has reached an advanced state it is essential that, as the use of VHF/UHF extends still further, precautions are taken to reduce the possibility of interference between systems operating under adverse conditions.

Interference between transmitters and receivers with antenna systems located close together is generally due to a combination of receiver related problems such as blocking desensitisation or compression, intermodulation, cross modulation, spurious responses and local oscillator radiation, as well as transmitter related problems like intermodulation, broadband noise and spurious/harmonic outputs.

With receiver blocking, the presence of a strong off-channel signal at the receiver input causes the RF amplifier and mixer circuits to saturate, which reduces their gain for on-channel signals. As a result, while the operator may not experience any apparent interference from a co-sited transmitter, his receiver sensitivity may be drastically reduced for the duration of the off-channel transmissions. In extreme cases the receiver mute will not lift even for relatively strong on-channel signals.

The blocking characteristics of a typical VHF receiver the PAE 1901 are shown in Figure 2. The graph shows the level of off-channel signal required to reduce the signal-to-noise ratio of a -107 dBm (1 μV pd) on-channel signal to 10 dB, this being considered the threshold of interference.

It may be seen from the graph that for a channel separation of say 1 MHz between the wanted and the interfering signal, blocking will be evident for interfering signal levels in excess of -5 dBm.

Receiver intermodulation is extremely common when single frequency simplex operation is employed.

SPURIOUS SIGNALS

If two signals are applied to a non-linear device, mixing will occur and additional spurious signals will result. The combined effect of two transmitters in the vicinity of the receiver having a certain frequency relationship to the receiver can cause intermodulation in the receiver by overloading the RF and mixer sections, with one of the intermodulation products falling within the receiver passband. Modulation on both the primary signals will appear on each of the spurious signals, which will cause severe interference.

A typical VHF receiver will produce internally generated intermodulation interference from received signals — with the

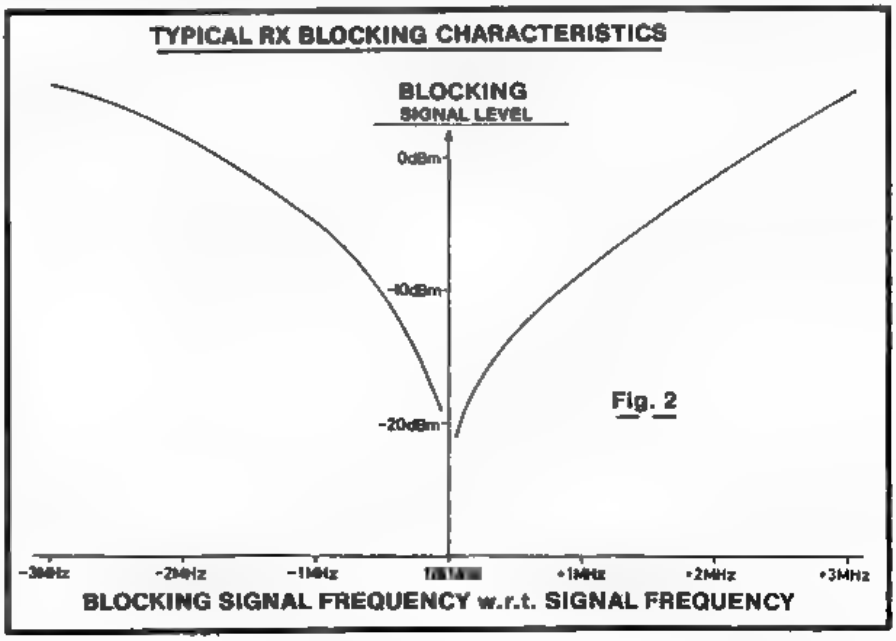


Fig. 2

appropriate frequency relationship — of 45 dBm. It should be noted however that the improvement resulting from attenuation of signals from interfering transmitters causing third order (2f1-f2) interference is much greater than the actual reduction in the level of the interfering signals. Normally every 1 dB change in the two tone input produces a 3 dB change in the third order product.

Receiver cross modulation is another very common form of interference and is caused by a strong off-channel signal from a single transmitter. If the off-channel signal is of sufficient amplitude to exceed the normal dynamic range of the receiver transfer characteristics the modulation from the off-channel signal can be transferred to a much smaller on-channel signal which is being received normally. Only a single off-channel transmitter is required to produce the interference and it need bear no particular frequency relationship to the wanted signal.

The cross modulation characteristics of a PAE 1901 receiver are shown in Figure 3. It can be seen that off-channel signals of -10 dBm at 1 MHz away from the tune frequency will produce interference.

MUCH LARGER CHANGE

The cross modulation effect is independent of the desired signal level until a level is reached at which the receiver AGC circuits reduce the RF amplifier gain and is proportional to the underside signal amplitude. For this reason, as in the case of intermodulation, a small change in the interfering signal amplitude results in a much larger change in the interference level.

Spurious responses can be produced in the receiver when harmonics of the receiver local oscillator beat with harmonics of strong off-channel signals in the mixer circuits. If a resulting beat product falls within the receiver's IF amplifier passband, the off-channel signal will be amplified in the normal manner. Thus interference is produced irrespective of the presence of an on-channel signal.

Receiver local oscillator radiation is inevitable despite careful design. A certain amount of power from the receiver's local oscillator finds its way into the antenna circuits where it is radiated into an adjacent receiver as a potential interfering signal.

Intermodulation between transmitters on closely spaced channels is caused mainly by the degree of coupling between transmitters in the system. Coupling mainly exists in the antenna system and, because a common mast is often used, the coupling between antennae can be very tight, as shown in Figure 1. The effect of this coupling is to feed voltages from one transmitter to another and, as the output stages usually operate in class C, the non-linearity can be considerable.

PROXIMITY IN RACKS

Some intermodulation can be present because of the proximity of equipment in racks. The possibility of standing waves on feeders close together also exists, but in general it can be assumed that the majority of intermodulation effects at the transmitters occur by coupling in the antenna system.

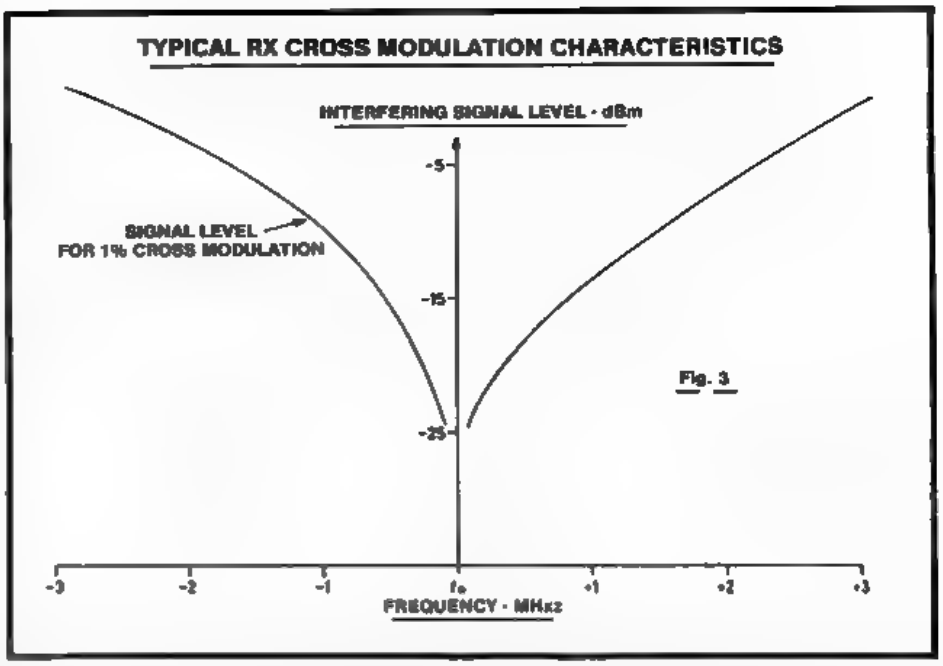


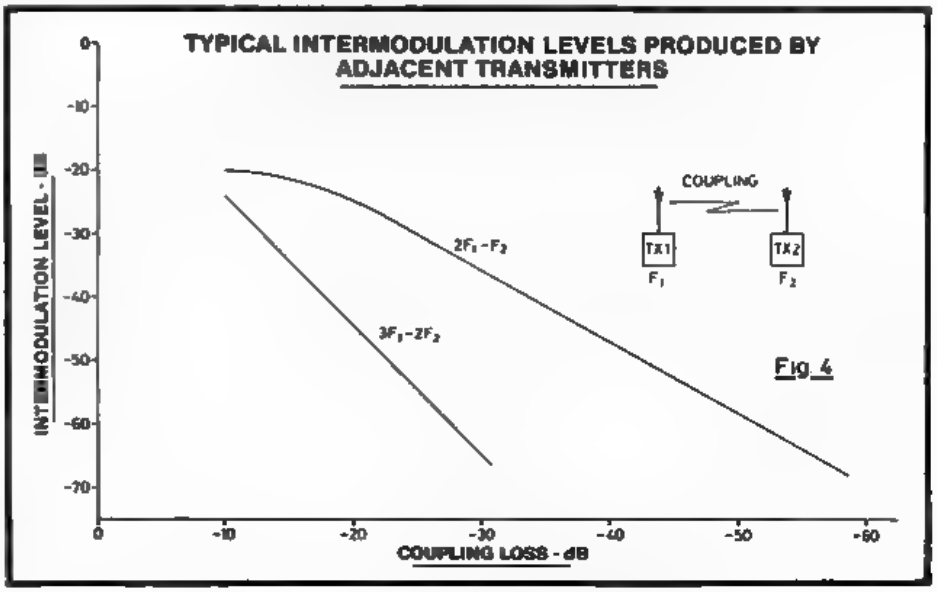
Figure 4 illustrates the variation of intermodulation product levels with isolation, and it is evident that such information indicates the amount of isolation necessary to achieve acceptably low levels of unwanted products. Normally a minimum isolation of 35 dB between transmitters must be achieved.

In addition to the usual noise source that receivers must cope with, there is the problem of wideband noise produced by nearby transmitters. Some degree of wideband noise radiation from a transmitter is inevitable, and the use of modern solid state wideband power amplifiers has meant that this particular aspect of transmitter performance has not been improved in line with most other parameters.

Figure 5 shows the noise performance of a typical VHF transmitter, the PAE 1500. The graph shows that at ±250 kHz the noise output is 150 dB/Hz below the carrier level. This is equivalent to a signal power of -61 dBm when related to a carrier power of 50 W/+47 dBm and a typical receiver detector bandwidth of 16 kHz.

In assessing the various causes of interference, it is apparent that the major factor is too close a coupling between transmitter and receiver antennae.

Most experts agree that the provision of as much space as possible between receiving and transmitting antennae is the most effective insurance against interference. The more space between the offending transmitter or transmitters and the receiver the less will be the interference problem. Doubling the distance will result in 6 dB of attenuation and, as has been shown, a reduction by 6 dB of a transmitted signal that causes interference may result in much more than a 6 dB improvement in the interference level. This is particularly true in the case of cross modulation and intermodulation.



It is possible to make reasonably accurate evaluations of potential interference problems, and it is convenient to divide these problems into two areas

* Interference caused by blocking, cross modulation and transmitter noise
* Interference caused by intermodulation

BLOCKING AND CROSS MODULATION

It is clear from the graphs of blocking and cross modulation that, for a transmission removed from the receiver tune frequency by 250 kHz the maximum level of signal that will not cause interference is approximately -20 dBm

Assume a Tx Power output of 25 W = +44,4 dBm
Tx Antenna feeder loss = -3 dB
Tx Antenna gain = + 2 15 dBi (½ wave dipole)
Rx Antenna feeder loss = -3 dB
Rx Antenna gain = + 2 15 dB (½ wave dipole)
Max Rx level to avoid interference = -20 dBm
Minimum attenuation = (44 4 -3 +2,15) - (-3 +2 15 -20) =43 55 + 20,85 = 64 40 dB
Minimum Tx - Rx attenuation = 64 40 dB

BROAD BAND NOISE

Considering the transmitter broad band noise
Assume Rx Sensitivity = -113 dBm
Rx antenna feeder loss = -3 dB
Rx antenna gain = + 2, 15 dBi
Thus Rx System sensitivity = -112, 15 dBm

The graph of Tx output noise (Figure 5) shows that at ±250 kHz the noise output is approximately -150 dB/Hz below the carrier
Assume Rx noise Bandwidth = 16 kHz (25 kHz channelling)
Then
The effective Tx noise signal = +44,4 dBm 25 W) - 150 dB + (10 $\log_{10}$ 16 x 10^3) dB = + 44,4 dBm - 107,96 dB = - 63,6 dBm
Minimum Tx- Rx attenuation = 112 15 - 63,6 = 48,55 dB

From these calculations it is apparent that a considerable degree of isolation between transmitters and receivers is necessary to avoid interference. This isolation must be provided by reducing the coupling between antennae or by providing additional selectivity at the receiver.

CAVITY FILTER

To achieve the necessary 64 dB isolation a separation of approximately 300 m between horizontal antennae is required This separation may be reduced by including a cavity filter in the receiver antenna lead. A tuned cavity filter is a high Q resonant circuit, usually in the form of a cylinder with approximate dimensions of 17 x 75 cm. Coupling adjustments are provided to adjust the insertion loss and selectivity

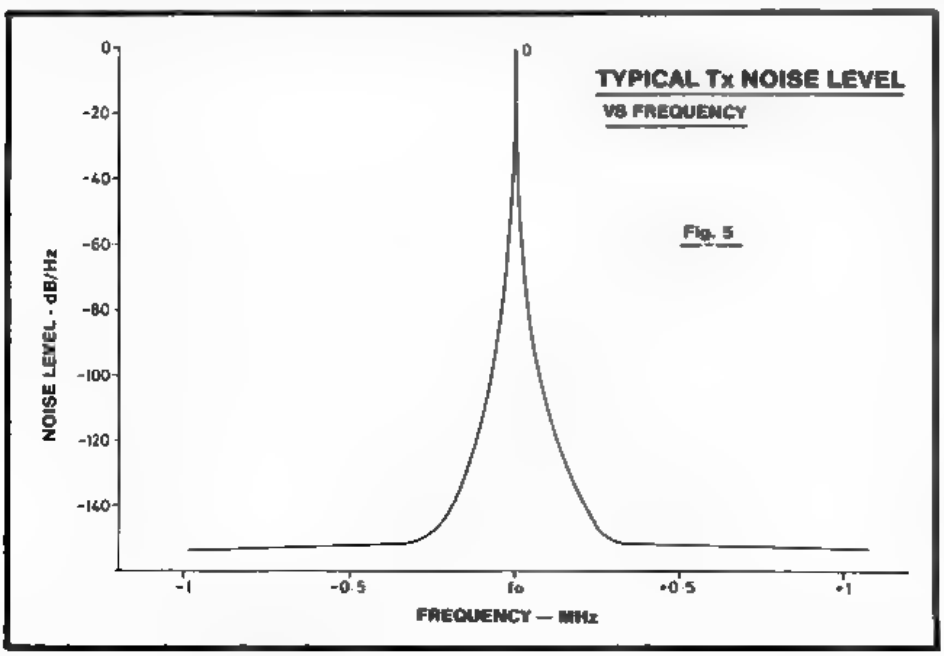
Figures 6A and B show the characteristics of a typical VHF filter It can be seen that an additional 15 dB protection can be provided at ±250 kHz. This would reduce the required antenna separation to 65 m

Further improvement in the receiver selectivity would reduce the antenna separation required to prevent cross modulation and blocking, but of course would offer no protection from transmitter noise since this appears on the tune frequency of the receiver To reduce this interference the cavity filter must be installed in the transmitter antenna system

A reduction in receiver sensitivity would allow closer positioning of the transmitter and receiver antennae. Reducing sensitivity from -113 dBm (0,5 uV pd) to -93 dBm (5 uV pd) would allow an antenna separation of 30 m without the filter With the filter a horizontal separation of 12 m would be required, or if the antennae were located vertically on the same mast, a 2 m separation would be sufficient

FREQUENCY SEPARATIONS

These calculations assume a frequency separation of ±250 kHz between the receiver and transmitter. The necessary corrections for other frequency separations can be made by reference to the graphs.



In the case of interference caused by intermodulation, the problem may be caused by intermodulation products generated either in the receiver or in a transmitter output circuit by cross coupling of power from another co-sited transmitter A typical receiver will generate intermodulation from two off-channel signals of -45 dBm The necessary attenuation can be achieved by frequency spacing or by physical distance, or by a combination of both, provided the effective resultant signals are less than -45 dBm

Certain advantages may be gained by the use of special antenna systems. For example, an offending transmitter may be 400 m from the receiver and there is no necessity to receive signals from that direction In such a case, a simple directional antenna with a front-to-back ratio of say 15 dB may suffice to reduce the offending signal to an acceptable level

As in the case of cross modulation, a considerable improvement may be effected by reducing the receiver effective sensitivity by inserting an antenna attenuator Reducing the sensitivity to 5 uV pd will allow the antenna separation to be reduced by approximately 10,1

Clearly, because the threshold for intermodulation interference is much lower than that for other types of interference, wherever possible frequency allocations should be arranged so that third order products are unlikely to occur

MAXIMUM ATTENUATION

The generation of intermodulation in transmitter output stages is caused by coupling between adjacent transmitters. To reduce the coupling antenna spacing should be arranged to introduce the maximum attenuation between the arrays in question. Maximum attenuation is always easier to obtain when antennae are in the vertical plane as shown in Figure 1

Further reduction in coupling can be achieved by the use of cavity filters in one or more of the transmitter antenna leads Including a filter in the transmitter output also has the advantage of reducing the broad band noise from the transmitter

An alternative method of reducing the coupling between transmitters, and one that has several advantages, is the use of ferrite isolators The isolator is fitted in the transmitter output lead and provides approximately 20 dB attenuation

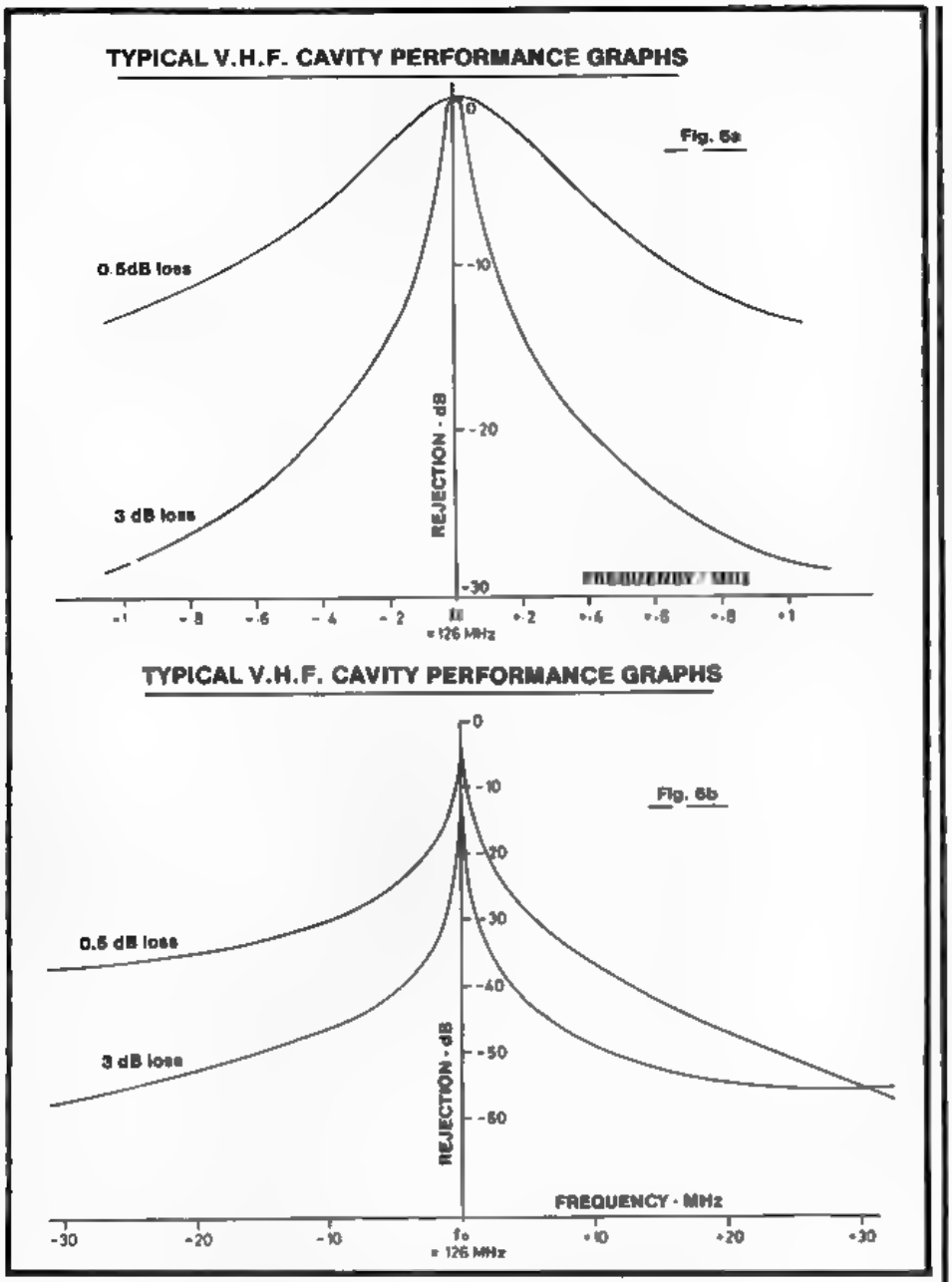
Reproduced by arrangement from: "Australian Electronics Engineering, May 1982"

INTERMODULATION

A recent practical example of an intermodulation problem came to the fore in Melbourne recently

The effect was first noticed by VK3DSW, and resulted in the effect of receiving a signal on 146.137.5 MHz when both "VOICE CALL", a new commercial paging service on 149.887.5 MHz and "TELECOM PAGER" on 148.012 5 MHz were both transmitting at the same time

Much of the primary investigations were



completed by VK3AMD; with technical assistance from VK3NE and VK3AFW, it was established beyond reasonable doubt that the problem was receiver 3rd order (2F1 - F2 = F3) intermodulation products. The effect is present in almost all receivers, although some have better immunity than others.

One of the most useful 'tools' for the location of intermodulation is a variable RF attenuator. Connected between the antenna feeder and the receiver input, it permits the reduction of the incoming signal in discrete steps and the observation of any overloading effecting the receiver.

It can be seen that a genuine on-frequency signal arriving at the receiver input can be reduced in level at the same rate as the increase in attenuation; yet an intermodulation product caused by receiver overload will disappear immediately the signal causing the overload is attenuated below the overload level.

If, on the other hand, a known intermodulation product drops in amplitude at exactly the same rate as the introduced attenuation, then it is certain that the receiver is not the cause, and the effect probably originates at the locality of the transmitter.

We would like to remind all Amateurs of the importance in giving every consideration to the susceptibility factor of their receiving equipment before investigating or filing complaints regarding what appears to be, commercial or non amateur signals within our bands.

If there is any doubt about your receiving equipment, try to borrow another receiver, preferably one with a known good immunity rating.

The National EMC Advisory Service is available to assist with any specific problems.

"CABLE TELEVISION: YES AND BE QUICK!"

Cable and Pay TV should be introduced as soon as possible, according to the Australian Broadcasting Tribunal.

The Tribunal's interim report which was tabled in Parliament recently said, the social, technical and economic arguments against cable TV were outweighed by the arguments in its favour.

The Tribunal recommends that responsible organisations like TELECOM and the ABC should not be allowed basic control of the system. This is a good indication that we could have the 'back-yard-mobs in for a quick quid" ..... Let us not forget Ch5A and Ch0! In effect, the Tribunal is recommending that we follow in the foot steps of the North American catastrophic mess. Even to the extent that an Association was formed recently in Sydney, with its main aim being to push cable TV.

The W.I.A. submission to the Tribunal in August last year stated —

> *"If we have to suffer Cable and Subscription Television — better to use fibre optic transmission systems; but lets make sure that which ever system is used, it is designed, installed, tested and maintained to the highest international standards. And all engineering services and maintenance be placed firmly under the control of a responsible body."*

The A.R.R.L.'s recent petition to the FCC, requested that CATV systems be prohibited from using amateur frequencies for distribution of their signals .... In response, the President of the Society of Cable Television Engineers said, "... it is the responsibility of every one of us to do our part to ensure that state-of-the-art cable systems are maintained in a manner that does not give rise to these kinds of petitions being filed before the FCC.

QSP

STRANGE BUT TRUE

Life is stranger than fiction. Two years ago, a Bellaire, Ohio amateur — Chuck Semprek, K8WDC — had his 2 metre rig stolen from his car while at a bowling alley. Later, Police recovered the rig along with other items and kept it for evidence.

In the meantime, K8WDC migrated to Texas due to employment. Two years later, he was back in the area for the Christmas holidays. At that time, the Police went through the evidence room and saw the 2-metre rig. Opening it up to see who it might belong to, they noted an amateur's call. Getting in touch with another amateur, they found out it belonged to K8WDC who was in the area from Texas. As a result, he got a belated present, courtesy the Police Department.

MORAL. Put your call letters, name and address inside that mobile rig.

Reprinted from World Radio June 82

SPOTLIGHT ON SWLing

Robin L Harwood VK7RH
5 Helen Street Launceston Tas 7250

ESPERANTO

Recently, in this column, I mentioned that only a few broadcasters were utilizing Esperanto — the artificial language devised to become an international means of speech and conversation. It never quite caught on, as English has become regarded as the universal language.

Purely by accident, I came across Radio Peking using this language on an unusual channel in the maritime radio allocation, on 8.425 MHz at 1300 UTC. The programme that I heard, mainly consisted of classroom lectures in this language. This programme, according to the WRTH is daily and is also on other channels and at other times of the day. Most of the broadcasts in Esperanto are weekly or monthly, from other shortwave stations. The signal was comparatively clear, but this would not always be so, as it is allocated for maritime communications, and there is considerable activity around this channel. You could try either 15.165, 11.685 or 6.995 MHz besides the 8.425 MHz outlet at this time. Two hours earlier, the same programme is on 9.860 and 15.510 MHz.

NEW DX CLUBS

The DX scene in Australia has changed in recent weeks, with the formation of two new DX Clubs. Both were formerly branches of the Adelaide based Southern Cross DX Club and have broken away to establish independent groups, one based in Melbourne and the other in Sydney. The Melbourne group has adopted the name of "DX Australia" and is comprised of most of the serious DXers of the Southern Cross group in Sydney, they have taken the name of the bulletin that the former SDC group used as the title for their club — "Capital DXers". In the statement put out by this club, they announced they were an independent group of DXers, and the onus would be on individual members which club they wished to support. DX Australia is a completely new organization with a monthly newsletter which is identical in layout to the "DX Post" in Adelaide.

The Australian Radio DX Club is therefore the only national organization still in existence. I do have serious reservations whether Australia can support three identical clubs each catering for the same enthusiasts, and duplicating what is obtainable in other magazines. Only time alone will tell if this is so.

OLD TIMER SWL

Mr Trevor D Moore VK6NIU of Coolbellup W.A. has sent me a clipping from a local newspaper about a Joondanna man receiving recognition from Deutsche Welle for monitoring their transmissions for 30 years. He was presented with a service tray and a folk song collection on tape for his efforts. Mr William Grosser has been submitting reports to various stations for over fifty years, and at 75 years of age, still finds enjoyment from listening and monitoring stations. Thanks Trevor, for submitting the clipping and our congratulations go to Mr Grosser for a job well done.

MEMORY EXPANDER

Here is some news for owners of the Yaesu FRG 7700. A Canadian firm has a Memory Expander for this model. As most of you are aware, there is an optional memory unit with 12 channels for this model. By modifying the receiver and memory, this can be expanded to 72 channels! I would imagine with the addition of this Memory Expander, this receiver could possibly be worth getting now. Further details can be obtained from:- Shortwave Horizons, 6815-12th Ave., Edmonton, Alberta, Canada T6K 3J6.

EVENING OPENINGS

By now, you should be noticing that the higher frequencies are opening up again in the evening hours. With the sunspot number declining, it is unlikely that we will get the phenomenal DX, particularly on ten and fifteen metres. Also, the lower bands will become rather noisy at night with atmospheric noise present, a most constantly. One compensation will be, however that with daylight saving in the southern states, we will be able to get up at a reasonable hour and receive signals from Africa.

WATCH TV

Do you remember seeing in the Dick Tracy comic strip so many years ago, a wristwatch TV set. Well, this has or soon will be a reality. Seiko, the Japanese watchmaker, has released a wrist-screen TV with a 1.2 inch liquid crystal display (LCD) and it draws its light from outside, hence no picture tube is required. There is a headset, which doubles as an aerial. It will weigh 1.5 ounces and will retail in the States for about $US 400. I suppose that this will be the craze of the future.

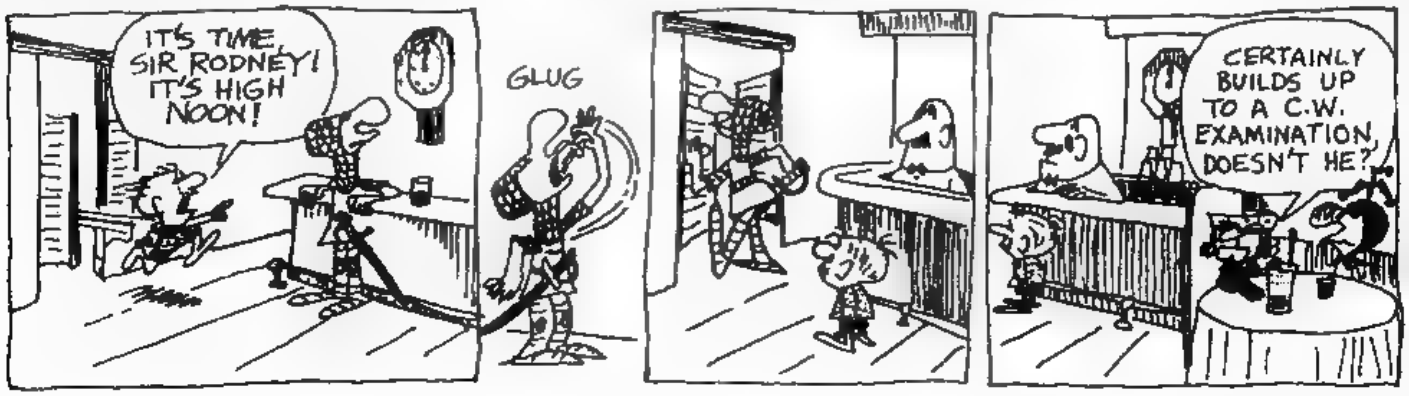
NEW READING MATERIAL

One useful book I purchased at a recent WIA meeting was titled "Better Shortwave Reception". It has been written by William I. Orr, W6SAI and Stuart D. Cowan W2LX and published by Radio Publications of Wilton, Conn. While it is written mainly for American readers, it still has a wealth of information for Australian readers. It deals with what shortwave radio is, buying a receiver aligning it, antennas as well as a section on listening above 30 MHz.

As it has been written for Americans some of the information relates to the domestic requirements, for instance, information on amateur radio and CB, which is different here in Australia. Nevertheless, it is still worth getting as it explains everything in a simple, direct style. It should be obtainable at most Technical Bookshops at a reasonable price.

Well, that is all for this month. I look forward to your company, next time. Until then, the best of 73's and good DXing!

Robin VK7RH



The Propagator May '82

AWARDS

Mike Bazley VK6HD
Federal Awards Manager
8 James Road, Kalamunda WA 6076

OPENING COMMENTS

Many thanks to those of you who took the trouble to comment on my remarks in June A.R., concerning the present status of DXCC. I hope to be able to give you further details of these views in a later issue. Comments ranged from scrapping DXCC to scrapping ARRL DXCC, with the W.I.A. running the International DXCC Awards programme! To give you some idea of what this latter comment entails, the ARRL DXCC awards programme, in 1981, issued 3516 new DXCC awards and checked 526,359 QSLs!!!

J28 AWARD

The Amateur Radio Association of Djibouti (A.R.A.D.) issues the J28 award to licensed amateurs and SWLs. All contacts must be made after 27th June '77.

All QSOs with J28 stations are valid as well as the special calls J27RDD and the DX-peditions, J28A, J20Z, J20D, plus any provisional J20 calls.

FIRST CLASS.

8 QSOs with stations in the Djibouti Republic, all modes but a minimum of two (2) bands must be used.

SECOND CLASS.

15 QSOs with stations in the Djibouti Republic. All modes but a minimum of two bands must be used and 5 QSOs need to be on CW.

The same station can be contacted on several bands.

APPLICATION.

List the QSOs. Photocopy of the QSLs. The fee is 8 IRCs.

ADDRESS

Award Manager J28DM, A.R.A.D., P.O. Box 1076, Djibouti, Djibouti Republic, East Africa.

VK4 AWARD

A note from J. Moulder, VK4YX says that he is the new custodian for the Queensland worked all cities and towns and worked all shires awards. Details of these awards are in the 1981/82 Call Book or alternatively information can be obtained from VK4YX, P.O. Box 323, Warwick. 4370.

DXCC NOTES

Rumour has it that the ARRL is considering dropping 3 countries from its DXCC list. These are KS4 Serrana Bank, HK0 Baja Neuvo and 8Z4 Neutral Zone. If you haven't worked these take heart, by September you may have three less countries to work. At this rate the ARRL will soon have to issue a new award called **"DXCC Deletions!!"** These three countries will take the deletions past the fifty mark.

OMANI AWARDS

Details of two Omani awards have been received, which are detailed below. Unfortunately my copy of this award is a black and white photocopy so I am unable to give readers a colour description.

The Royal Omani Amateur Radio Society was formed in 1972 under the gracious patronage of His Majesty Sultan Qaboos Bin Said (A4XAA). To celebrate the Tenth Anniversary of this occasion it is intended to operate a Special Event Station for a forty-hour period on the weekend of Saturday 27th and Sunday 28th November 1982.

The callsign of the station is to be A4XX. Times of operation are 0200 UTC on the Saturday to 1800 UTC on the Sunday. The mode of operation will be SSB only on the 10, 15 and 20 metre bands simultaneously.

1. THE "OMANI AWARD" with Tenth Anniversary Endorsement may be claimed by working A4XX on three bands. A special QSL card will be available for single band contacts. All claims for the award should be accompanied by a log extract certified by an amateur radio club official and should also include five IRCs or equivalent. Claims should be sent to The Awards Manager, ROARS, P.O. Box 981, Muscat, Sultanate of Oman, no later than 31st May 1983.

2. "ROYAL OMANI AMATEUR RADIO SOCIETY AWARD" is designed in such a way that it can be awarded for any number of events, contests or conditions as determined by the ROARS Executive Committee. The conditions and parameters, within which the award may be claimed, are as follows:-

The award is currently available to claimants who have worked eight stations SSB or five stations on CW with the A4X prefix. The award will display the appropriate endorsement.

The following conditions must be met:

1. The claim must be accompanied by a "log" extract. This is to be certified and countersigned by an official of an affiliated radio club.
2. Five IRCs or equivalent should be enclosed.
3. The claim is to be addressed to "The Awards Manager", ROARS, P.O. Box 981, Muscat, The Sultanate of Oman.

Incorrect claims will not be entertained or replied to.

Happy Hunting,
73 DX Mike, VK6HD

Do Not Forget

Jota Weekend
16 & 17 October

COMMERCIAL CHATTER

"ELECTRONICA 82"

ELECTRONICA 82 — 10th International Trade Fair for Components and Assemblies in Electronics, will take place from 9-13 November 82 in Munich/West Germany.

1,060 exhibitors from 31 countries will show latest developments in the dynamic world market of electronics.

ELECTRONICA is organised into five main product sections. These are:

SECTION A — Semiconductors and tubes.

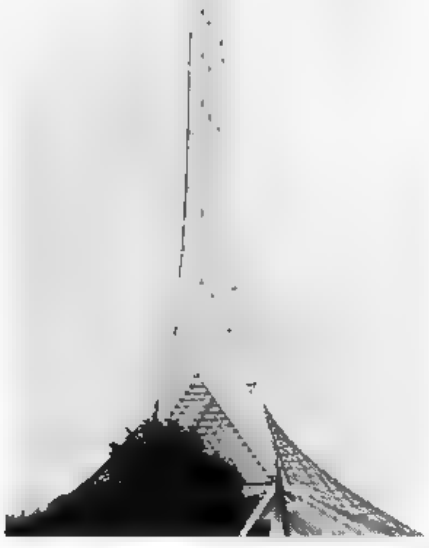
SECTION B — Passive components and connecting elements.

SECTION C — Devices made up of components.

SECTION D — Electro-mechanical and mechanical components.

SECTION E — Aids for electronics development.

ELECTRONICA '82 will be supported by an interesting programme of congresses and lectures beginning with the 10th International Congress on Microelectronics. More details are available from German/Australian Chamber of Industry and Commerce, 18th Floor, Amex Tower, 388 George St., Sydney. Ph. (02) 232 5922 or Melbourne (03) 51 5826, 51 5504.



"My new log periodic and 96 element 70 cm beams will go up next week if the dock strike finishes in time".
(with apologies to the Melbourne Arts Centre).

VK3CIF

CLUB CORNER

'LYREBIRD' HAS FEATHERS PLUCKED!!

Back in 1975 the only two Amateurs in the Milton/Ulladulla district, VK2HQ and VK2BTQ (then VK2YDQ), initiated a move to provide a VHF Repeater service for itinerant amateurs on the Mid-South-Coast. A Club was formed for this specific purpose, and over the years the Repeater has filled a need and the Club has grown (although mostly members of other Clubs). Now however, the establishment by the Shoalhaven District Amateur Radio Club of a fine Repeater, VK2RSD on a superior site has rendered VK2RMU superfluous. The Shoalhaven Club, with its youthful state-of-the-art membership, is better able to cope with Repeater problems than the Milton/Ulladulla retired over-the-hill types. Two country Repeaters, both performing a roughly equivalent service were considered an unnecessary luxury.

At this stage the Club's Repeater Officer and the Editor of the Lyrebird, because of advancing years, decided to curtail heavy-demand activities. Accordingly, a "Steering" Committee was formed, comprising the amateurs in the district to study the matter, weigh the pros and cons, and present the findings to the October quarterly meeting. This was done, and after discussion the meeting passed the following resolutions:

(1) That the Repeater VK2RMU be shut down as from 1st November 1981.

(2) That the Mid-South-Coast Amateur Radio Club be closed down as from the Annual General Meeting to be held in January 1982 (now February 13th).

(3) That the Executive Committee take the necessary steps to wind up the affairs of the Club and dispose of the assets.

Although this was a majority decision, there is some sadness at the passing of the three-monthly barbecue/meetings, which many have proclaimed as the most stimulating and pleasurable Amateur gatherings they have been associated with. It is not surprising, therefore, that moves are afoot to reconstitute the Club, on a social basis, to continue the cordial and convivial relationships already established.

Our heartfelt thanks and gratitude to all who have assisted the Club over the years by donations of money, material, loan of equipment, and hard work generally. Mention is made, in particular, of the outstanding encouragement and support given the Club by its one and only five-year President, Frank Hill, VK2HQ. From the beginning, Frank and XYL Jean, made their delightful property available, at personal inconvenience, for barbecues and meetings, and, for four years, tolerated the presence of the Repeater (with attendant nuisance maintenance visits at all hours) in their front garden. Thanks Fred and Jean! The world would be a better place with a few more like you! Our appreciative thanks also to our successive Secretary/Treasurers, VK2YDA, VK2ADR, VK2ATO and VK2YGY. They have performed duties of sterling worth with mathematical precision. Then, without doubt, we owe a great deal to Bill VK2JJ and XYL Helen for the many hours of Newsletter typing. We fear that Bill's saltmine contracts must have suffered accordingly. Without Bill and Helen the "Lyrebird" would have had a very miserable plumage. Thanks also to Brian VK2AUN whose unstinting assistance involving many hours over this last year, has been greatly appreciated. And not forgetting, of course, all who have supported and controlled our weekly nets, outstanding of whom has been Kevin VK2BKG. Great work, Kevin!

After some 21 issues of Lyrebird, the Editor lays aside his quill with regret, but also with relief at the conclusion of an onerous (to me) responsibility. I trust that all our readers have enjoyed the publication as much as I have in producing it. God bless!

John VK2BTQ

(Editorial from "Lyrebird" (Final Issue) - December 1981)

A COMPLAINT ABOUT A BAD HABIT

While I am typing this, I am listening to a scanning receiver loaded with most of the amateur repeater frequencies. I had not noticed how epidemic the practice of UNIDENTIFIED TRANSMITTING had become.

I hate to bellyache about minor rules violation but this is getting out of control. What I am referring to is repeater kerchunking. It only takes a couple of squirrels to trash a whole town full of repeaters. On the other hand, a whole town full of repeater operators can collectively do the same thing without any intended malice. For example, a thousand operators, each kerchunking once a day, will key a repeater approximately once a minute, assuming they all sleep eight hours a night, and at the same time.

I don't have any complaint about people testing their equipment, in fact I think it is a good idea. My complaint is that so many do it WITHOUT IDENTIFYING. The practice seems harmless enough, but it is contagious. Perhaps some of the reason is that the operator does not want to talk, he just wants to test. So what's wrong with saying "VK.... TEST"? Don't answer if someone calls. You can even say, "VK.... TEST AND QSY" to give some reason for not answering. All I am asking is that we try and give a better example than the anonymous CB operator.

BRUCE VK3UV VIA
JOE K5JB IN COLLECTOR & EMITTER

EDUCATION NOTES

Brenda Edmonds VK3KT
Federal Education Co-ordinator,
56 Baden Powell Drive, Frankston, 3199

EDUCATION IN VK5

I have recently had the opportunity to discuss education matters and courses with a number of members of the VK5 division. I was most impressed with their enthusiasm and achievements in this field. John Mitchell VK5JM and others have produced a teaching guide to cover the Novice Syllabus and distributed it to a number of colleges of Further Education in South Australia. This course has now been in use for two or three years, and has resulted in pass rates among students completing the course which are significantly higher than the state average. The course is designed so that the instructor does not have to be an electronics or radio expert. It comes complete with morse tapes and slides, student handouts and overhead projection transparencies and a suggested time allocation for each section. I have not yet had time to look at the content in detail, but overall it seems to be a most successful project. The only restriction on its broader use is that it is intended for use in an educational establishment and relies on the availability of a certain amount of 'hardware' and duplicating facilities.

UPGRADING COURSE

A VK3 group is now working on putting together a similar package for an upgrading course from Novice to Full Call. Any comments or suggestions from amateurs who have been involved in such courses either as student or instructor, would be most welcome. Send your ideas to me QTHR or via the Executive Office, or call in on the Education Net which runs Wednesday evenings on about 3.685 MHz at 12.00 UTC.

I have also been in touch with a number of groups in Northern VK3. Many of those contacted report a drop in the demand for classes this year, but they are still offering classes if there is a demand. If you know someone who wants to gain a licence, find out what is being offered by nearby clubs or TAFE colleges.

NEW NOVICE TRIAL EXAMS

I hope to have a new Trial Novice Theory Exam paper ready about mid October. If you are studying as a class member, check with your instructor before requesting a personal copy. I strongly advise all intending examination candidates to do as much practice as possible on multichoice questions under simulated exam conditions. Also make sure you know why each answer was right (or wrong). There are many sets of questions available now. Even the poor questions have some learning value.

Keep at it - there's not much longer to go now.

73 Brenda VK3KT

WICEN NEWS

JENOLAN CAVES RESCUE

R. G. Henderson VK1RH
171 Kingsford Smith Drive, Melba, ACT 2615

The Jenolan Caves are a tourist area about 3 hours drive west of Sydney. A number of the caves have been set up with paths, lights and guided tours for the public. Private exploration of the 300 caves in the area is restricted.

On Monday 23rd August a 15 year old youth, who was described as a cave fanatic, left his party to do some private exploration. He was only equipped with a box of matches.

When he did not return a search was organised. This was the first time in the 50 years that the caves have been open to the public that anyone has become lost in the caves.

In NSW the Police are in charge of all search and rescue operations, however the Police Rescue Squads do not have expertise in cave rescue.

The Cave Rescue Group of the NSW Volunteer Rescue Association were called in to direct the search operation. Like WICEN the Cave Rescue Group is one of the statewide specialised squads of the NSW VRA.

By Tuesday midday the VRA, Police Rescue Squads, Local Bushfire groups and the Park officials had conducted a search of the nearby public areas above the ground. The underground search was continuing and a second shift of Cave Rescue personnel had been brought in to relieve those who had been underground for many hours.

Back in Sydney, other VRA squads such as the Bushwalkers Search and Rescue Group and WICEN were monitoring the situation in case of a step-up in the level of the search activity. Obtaining information on the current status of the search was made more difficult by the failure of all telephones at the Police Rescue HQ in Sydney.

As the afternoon passed with no sign of success, WICEN and the Bushwalkers S&R groups were placed in a state of readiness in anticipation of an expansion of the search activities.

The boy had been missing for over 30 hours and fear was expressed that he would have to be found soon. Although every sign indicated that he would be in the caves, there was always the possibility that he might be on the surface and with the cold nights could be suffering from severe exposure, especially if he was to be out for another night.

At *242000K on the Tuesday the Katoomba Police Rescue Squad activated WICEN and requested 18 radio stations to be at Jenolan Caves and ready to go into the field by 250600K the following morning.

WICEN groups in the Central Western region and the 3 Sydney regions were activated and prepared to leave for the area.

Whilst the Sydney groups headed for bed for a few hours rest before departing at 250300K, the Central Western group set about restoring the ch 6650 2m repeater at Mt. Bindo. This repeater is located near the site of the rescue, however it had been partially dismantled following very high winds which had sheared the shaft on its wind generator.

From previous experience with searches, such as the search for a missing aircraft at Barrington Tops, we knew that there was the possibility of the search continuing on to the Thursday. Accordingly a relief group was also organised from amongst those who were unable to attend on the Wednesday.

Additionally home stations were rostered to provide a link back from the rescue site to the various HQ groups in Sydney.

After the period of hurried activity by WICEN Co-ordinators, everything appeared to be set for the start early the following morning. All operators had been told to carry some food in their cars as they could not be certain that they would be fed by the authorities and they were to carry some light refreshments in their pockets in case they found themselves away for a long period.

Just after 242230K a message was received that the searchers had voice contact with the boy and his parents were to be returned to the site. Rather than act on this information immediately to call off the activation, efforts were made to verify that the search was over. This action was taken because a Sydney group had been turned back on similar information earlier in the year — only to arrive home to find a message waiting telling them that the search was continuing and that they were to set out again. On that occasion many hours had been wasted.

The fact that the boy had been found only 30 metres inside one of the larger caves was soon confirmed and the activation procedure was started again. This time in reverse to notify everyone that they could enjoy a full nights sleep.

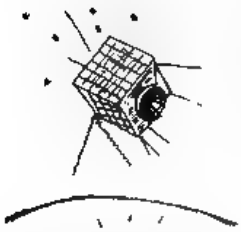
Everyone was relieved that the boy had been found uninjured and in reasonable health. He had apparently moved into the cave and his matches had run out, he fortunately had realised that to move about in the pitch blackness would result in injury. He had sat down where he was to await his rescue some 33 hours later. This was the most sensible thing to do in the circumstances and it must have taken a lot of courage.

A number of interesting lessons were learnt from this event. Apart from the WICEN members, who discovered that some of their gear wasn't in the state of preparedness that they had assumed, the fact that the call out occurred during the week severely restricted the number of people who could drop their work commitments and travel to the rescue site. For some the cost factor was also a problem. The return trip would have consumed a full tank of petrol. As a volunteer organisation WICEN provides its services FREE of any cost to the victims, the agency calling on our services or the general public.

That the Police had called on WICEN for such a large number of stations indicated that they would be placing a significant load on the amateur network and was a reflection of the trust and understanding that is being built up between WICEN and the authorities.

**The times eg: 240300K are defined by date (24), time groups (0300) local (K).*

D.R. Mackay VK2ZMZ
NSW WICEN Coordinator



AMSAT AUSTRALIA

Bob Arnold VK3ZBB
41 Grammar Street, Strathmore 3041

CO ORDINATOR
Chas Robinson, VK3ACR
CORRESPONDENTS
VK3YQX, VK5AGR
ACKNOWLEDGEMENTS
AMSAT Satellite Report AMSAT-UK News
INFORMATION NETS

AMSAT AUSTRAL A 1000 UTC Sunday and Wednesday 3 680 MHz winter, 7 064 MHz summer Contro VK3ACR

AMSAT PACIFIC 1100 UTC Sunday 14.305 MHz. Contro JA1ANG

AMSAT SW PACIFIC 2200 UTC Saturday 28.880 MHz Contro W6CG

From t me to time quite a number of stations in a l States join the AMSAT - Austra a net on Sunday and Wednesday even ngs. Control station, Charlie VK3ACR is aware that there are also a number of listeners to the net - licenced amateurs educationa sts computer buffs and SWL's. Charlie would l ke to hear from these listeners w th some comment on h s signal strength and suggestions on what is required for the broadcast Drop a note to Charlie at 338 Dorset Rd Boron a, Vic, 3155, it will be apprec ated and acknow edged

SATELLITE STATUS REPORT
UOSAT 9

As previous y reported the 46 metre dish at Stanford Research Institute, California was turned to track UOSAT Several good tracking runs were made but the sate lite did not respond to commands directed to it from the SRI transmitter. It appears that the 2 metre command receiver has precedence over the 70 cm command receiver

The SRI station s now being reconfigured to perm.t command attempts on 2 metres.

ISKRA RK02

t has now been confirmed that ISKRA 2 fell from orbit at about 0019 UTC on 9 July at a pos tion just Northwest of the Canary Islands. To date there has been no comment from the USSR but it wou d seem that whilst the beacon performed well on 29.578 MHz the prime objective of operating the 21 to 29 MHz transponder was not achieved

AMSAT OSCAR 8 AND RS 3 to 8

Operat ng to schedule

PUBLICATIONS

I recently received a copy of the 1982 ed tion of "Guide to Oscar Operating" pub- shed by AMSAT-UK. Although ncluding a short section of history, the text is right up to date and gives usefu data on Oscars 8 and 9 together with RS3 to 8 Provisional data is given for AMSAT Phase III B so the book should remain current into 1985

The contents include operating frequencies and Aerial Polarizations as well as a lot of basic information on practical operating Whilst several references are quoted, only one practical project - a 29 MHz pre-amplifier - is described in detail. My main criticism would be the lack of detailed information to interpret satellite telemetry information In summary, a handy reference book for the experienced satellite operator and a must for the amateur (or listener) wishing to enter the fascinating world of satellites

The Guide is obtainable from AMSAT-UK 94 Herongate Rd, Wanstead Park, London E125EQ for 55p plus 89p airmail (approx $2 60 + draft). I have a number of copies on order for delivery by sea, hopefully in October, and will send these anywhere in Australia for $1 90 each

CABLESAT

Information has been received that Cablesat General Corporation (CGC) has filed with the F.C.C. a request to launch and use two geostationary satellites

Each satellite will be operated professionally but will have incorporated in it, an Amateur Transponder known as 'ARNET'

The transponder will have an input frequency in the 5GHz band and the down frequency will be in the 3GHz band

Ground station requirements will be modest, a 2m dish with ten Watts input power will be adequate

A launch date in late 1985 is anticipated.

The location of these satellites in geo-stationary orbit is awaited with great interest.

UOSAT

Despite the problems which have arisen on the command of UOSAT, considerable technological advance has been made with this satellite. The following report by Dr Martin Sweeting, G3YJO, the UOSAT Project Leader, reprinted by courtesy of AMSAT-UK is included to permanently record these achievements

UOSAT SPACECRAFT PROJECT - PROGRESS REPORT 9 JUNE 1982
Dr. M.N. Sweeting, G3YJO
Project Leader

UOSAT-OSCAR-9 was launched successfully by NASA on 6th October 1981 on board a DELTA 2310 from the Western Space & Missile Centre, Vandenberg, California at 11:27 UTC into a 554 km, 95 minute, polar, sun-synchronous orbit. Shortly after separation from the DELTA vehicle, the spacecraft primary (VHF) data transmitter was switched on by the Surrey Command Station and later the telemetry system was activated - providing data on the status of the satellite.

This report summarises the progress and status of the UOSAT spacecraft during the period from March 1981 to June 1982

A series of detailed papers covering the UOSAT project have been submitted to the IERE for publication in an issue of their journal devoted entirely to UOSAT Rather than duplicate the proofs for this report, copies of the journal will be sent to all project sponsors and will be made available, on request, to those who have been associated with the Project in other ways.

In summary, the following systems have been activated and found to be functioning nominally

Telemetry (1200. 300, 110, 45.5 baud, morse code, & dwell mode)
Telecommand and computer uplinks
Power system
145.825 MHz General data downlink transmitter
435.025 MHz Engineering data downlink transmitter
Navigation magnetometer (One axis exhibits an offset)
Primary spacecraft computer (RCA 1802 - problem with computer/command port)
Secondary spacecraft computer (FERRANTI F 100L)
20 keV particle detector experiment (40 keV detector not functioning)
Primary magnetometer experiment
Visual Display Experiment (Test pattern)
CCD camera (several random images)
Speech synthesiser (under control of the primary computer)
Attitude control magnetorquer

The Particle Experiment has detected several major electro-magnetic storms during October 1981 and February 1982, yielding counts in excess of 10,000 per second over the auroral regions. (The background count is usually around 50 per sec.)

Both on-board computers have been in operation since October, providing autonomous control of the spacecraft and the remote collection of experiment and telemetry data, whilst also generating useful data on the performance of both static and dynamic CMOS memory devices in a space environment

The current orbit parameters are as follows.

Period 95.066814 minutes
Period drag factor 0.00539202 minutes per orbit (subtracted)
Increment at orbit 23.765189 degrees W per orbit
Increment drag factor 0.0000135673 degrees per orbit (subtracted)
Inclination 97.462 degrees
Mean altitude 535 kilometres
(Note: UOSAT has 'dropped' some 20 km in altitude since launch due to atmospheric drag).

UOSAT PRE-LAUNCH ACTIVITIES

A period of intense activity occupied the six months before launch and, rather than follow a blow-by-blow account, the major features are summarised

PRINTED CIRCUIT DESIGN & FABRICATION

An essential facility for the development of the electrical sub-systems was the computer-aided printed circuit layout-machine - the RACAL CADET. This facility enabled us to design the PCB layouts in-house, often by, or at least associated with the sub-system designer, yielding fewer mistakes and far more rapid turn-around than could be achieved by sub-contract. Five members of the team were taught to use the machine and after around one week's experience it generally took about 1.5 days to lay out a single (double-sided) PCB for the standard sub-system box containing around 45 IC's. More important still was the ability to have artwork back within one day, a prototype PCB within three days and later, modifications to final flight PCB's within a week! Flight PCB's were produced by MHOTRAK Ltd.

The CCD Imaging Expt and Primary s/c Computer PCB's were generated by a sub-contractor and CERN respectively.

SUB-SYSTEM TEST

The electronic sub-system development followed the well-trodden path of:

BREADBOARD

All the spacecraft sub-systems were constructed in a bread-board arrangement initially to assess overall performance, interface compatabilities and to uncover any unexpected problem areas. Provisional component procurement, interface and harness documentation was generated at this stage.

ENGINEERING MODEL

Engineering models of the spacecraft sub-systems were used to evaluate detailed system performance, interface and E.M. compatabilities, spurious emissions and responses and mechanical integration problems. Each sub-system was subjected to Flight qualification Environmental Tests as follows.

Vibration - after initial screening test, 1.5 times the levels and duration of the Delta Restraints Handbook
Thermal - 100 hours thermal cycling between + 50°C to -30°C.
Life Test - 1000 hours soak test at room temperature
Antenna - a full scale RF model of the s/c structure with antennas was evaluated
Deployment - Deployment of the gravity gradient boom and H.F. antennas were tested

FLIGHT MODEL AND SPACECRAFT INTEGRATION

Due to the extremely tight schedule (launch date had been provisionally brought forward six weeks), the flight-rated spacecraft structure that had been used for the flight acceptance vibration tests and the launch vehicle fit-check was cleaned to be used as the flight model. All flight hardware was assembled, and the spacecraft integration carried out, in the clean area using clean procedures. The assembled sub-systems underwent thorough test and preliminary calibration before a screening environmental test sequence carried out at Guildford, followed if satisfactory, by a sinusoidal sweep vibration test at flight acceptance levels using the RAE facility nearby at Farnborough. The sub-systems were thermal cycled between +50°C to -30°C on a 12 hour cycle for three days. Wherever possible, an additional 1000 hours operation at room temperature was also completed.

Final flight acceptance tests of the integrated spacecraft were carried out at the environmental test facility at British Aerospace (Stevenage):

Spin Balance - spacecraft structure underwent both static and dynamic balance to within ± 10gm metres
Vibration - all axes to levels and duration specified in the DELTA restraints handbook.
Thermal Vacuum - thermal cycling according to test profile within +40°C to -20°C.
Solar Array performance tests were also carried out at the RAE facility and VI calibration curves obtained with reference to AMO.
The structure was de-gaussed and magnetic cleanliness tests performed at the Goddard Space Flight Centre Magnetic Test Facility (USA). The primary and navigation magnetometers were also calibrated.
Electro-magnetic compatibility tests were carried out both at University of Surrey and the Western Test Range, however it was not possible to perform these tests in an anechoic chamber

DEVELOPMENT AND FABRICATION LABORATORY FACILITIES

A clean area for the assembly of the flight modules and the integration of the spacecraft was not initially available at the University, so a small clean-room was constructed from wood with a polythene roof within an existing laboratory. The clean-room measured 12' x 12' x 8' and was kept under positive pressure by a filtered air-pump to maintain a dust-free atmosphere. The inside of the clean-room had been painted four times at intervals of four days after pressurisation to 'stick down' any dust. The cost of the clean-room was around £350 and proved to be considerably cleaner than most of the external test facilities. Gowns, gloves, over-shoes and hats were worn at all times in the clean area which was frequently vacuumed. By far the greatest amount of debris found was of human origin (hair, fluff).

A separate development lab area was established adjacent to the clean-room where the spacecraft modules were developed, tested and the ground support equipment assembled.

A 200 sq. ft. area was used for the Project Office and the assembly of the Ground Control Station adjacent to the main tracking antenna system.

ELECTRICAL HARNESS

Inter-module electrical connections are made using standard 25 way 'D' connectors, with a maximum of three on both long sides of each module box. The wiring harness assembly runs up the outside corners of the central column and around its 'waist'. The 'D' connectors are high temperature mouldings with recessed pins and all wiring is PTFE (TEFLON) coated. Each connection to the 'D' connectors is sleeved with PTFE tubing, the connector secured with captive bolts and the joints supported by RTV potting compound. The electronic module boxes are all mechanically identical to ease fabrication, assembly and integration with the spacecraft.

THERMAL FINISHES

Thermal analysis of the heat flow around the spacecraft body stepped through one orbit showed that the energy dissipated by the spacecraft electronics could be considered negligible compared to the energy falling on the solar arrays during the illuminated portion of the orbit. In order to maintain a reasonable operating temperature the top of the spacecraft is completely, and the 'bottom' partly, covered with silvered TEFLON Optical Solar Reflector (OSR). The reverse facet of each of the solar array panels is covered with KAPTON film in order to radiate heat away from the array itself when illuminated. The spacecraft should maintain a slow residual spin around the 'z' axis even when stabilised, in order to even out thermal gradients. The spacecraft has been designed to operate with a battery temperature between 0 to +20°C.

LAUNCH AGENCY INTERFACES

Whilst there was direct contact between the Delta Project Office and the University of Surrey, AMSAT acted as a local UOSAT representative and dealt most effectively with the day-to-day matters thus minimising travel (three UOSAT visits to Delta and one Delta visit to University of Surrey). AMSAT-USA were, of course, heavily involved in the UOSAT Project as they contributed the Primary Magnetometer Instrument and thus were quite familiar with UOSAT.

The paperwork normally required by NASA presented a severe problem to the small UOSAT team who had neither the manpower nor the experience to comply fully. Delta responded by agreeing to minimise the paperwork to that necessary to satisfy the mission specification and safety requirements, whilst AMSAT agreed to advise UOSAT closely on the preparation of the necessary documents, comprising.

Spacecraft Questionnaire
Mission Requirements
UOSAT Spacecraft Structural Analysis
UOSAT Launch Procedures
UOSAT Safety Drawings and Procedures

A documentation schedule was agreed with Delta taking into account the UOSAT timetable, although, as usual, this timetable proved difficult to maintain due to the pressures of spacecraft development.

Two major reviews took place between UOSAT - AMSAT - DELTA. The first was a 'fit-check' at the McDonnell Douglas Delta production facility at Long Beach Ca. where

the flight UOSAT spacecraft structure was mated to the upper stage of the vehicle. This proved to be particularly valuable as several potential integration problems were identified in time to be rectified and it was also possible to run through the detailed spacecraft mating procedures. A second major review was held at University of Surrey three months before launch where final launch campaign details were refined and final Delta integration and structural analysis examined.

UOSAT requested minimal support facilities from the launch site at Vandenberg Air Force Base, agreeing to cover all launch support requirements from either University of Surrey or AMSAT. Considerable launch support was provided by AMSAT members in California in terms of test equipment and necessary logistics. UOSAT requested a 400 sq. ft. clean area and a similar office area at Vandenberg with appropriate power sources only. In fact, the NASA-DELTA-MDAC launch support staff were only too pleased to provide any additional support necessary during the campaign, and were most helpful.

The UOSAT launch campaign comprised.

2 days shipping by air
3 days Magnetometer calibration at GSFC
2 days shipping by air
4 days Spacecraft final flight preparations
3 days Final spacecraft functional and calibration checkout
1 day Spacecraft integration with Delta 2310 vehicle.
23 days spacecraft enclosed in nitrogen purge bag awaiting launch.

ORBITAL SYSTEM PERFORMANCE

Following the successful launch and orbital insertion of the UOSAT spacecraft on 6th October 1981, the 145 MHz downlink transmitter was activated on the first orbit from the command station at University of Surrey. The downlink data selectors were initially set to monitor the data uplink and the next day the telemetry system was activated and 300 baud data transmission commenced. Initial telemetry data indicated that all the service substations were performing correctly and that the spacecraft was stable and spinning around the z-axis at a rate of once every 27 seconds. The spacecraft batteries stabilised at + 3°C and since launch have cycled between -5°C and +6°C on an approx. six week cycle.

A checkout sequence was then initiated, progressively powering-up the engineering and science experiment sub-systems — all systems responded successfully. The importance must be stressed of a thorough and systematic check-out of the s/c computers, control algorithms and the calibration of the navigation sensors initial s/c orientation, before any attitude manoeuvres are attempted.

CONCLUSIONS AND FUTURE PROGRAMS

The UOSAT Project has clearly demonstrated the feasibility and capability of a small, low-cost space program within the U.K., carried out between a University and British Industry and Research Organisations. Commencing in January 1979, the spacecraft was constructed, satisfactorily passed full functional and environmental tests and successfully launched by NASA two and a half years later within a cash budget of £120,000 with additional facilities to the value of around £100,000. The UOSAT spacecraft has been operating correctly in orbit for over seven months and has returned large amounts of engineering and science data. The 40 keV particle detector appears to have been damaged during launch and some difficulty has been experienced using the primary computer to control the spacecraft day-to-day operations. One axis of the navigation magnetomer exhibits an offset and it was not possible before launch to achieve as great a degree of isolation from the VHF/UHF antenna hybrid as was desired. A problem associated with this latter constraint occurred in April 1982 temporarily halting data flow, however, the problem has been simulated on the ground and should be resolved within weeks. All other spacecraft systems are performing nominally.

Several lessons may be learnt from the Project, summarised as follows.

A small team can successfully generate and manage the resources necessary to design, build and operate a small spacecraft capable of worthwhile scientific and engineering contributions.

A project of this nature can be successfully completed within a tight budget of around £225,000 and within a very short timescale of 2.5 years. It is only possible with a highly motivated, above average capability, multi-disciplinary team.

Geographic compactness of the primary team and in-house resources are essential.

Although several changes in approach would be taken for any future similar project, the basic approach is sound.

The post-launch operation and data collection from a low-orbiting spacecraft should not be under-estimated and requires similar resources to the design and construction phase.

A person dedicated to realistic documentation control, procurement and interface control is essential.

The importance of the UOSAT Project is in that it has demonstrated the potential for a continued national space program, within a very reasonable budget, capable of significant science and engineering return. The relevance of low-cost space-craft is directly related to the availability of inexpensive and useful launch opportunities. A number of sources exist and occasional opportunities do occur:

NASA secondary payloads - expendable and STS
ESA ARIANE secondary payloads
USAF
Commercial launch agencies - Space Services Inc.,
India
Japan
Russia

Providing cost-effective launches can be procured, the scientific and engineering communities have a facility for carrying out relatively small but profitable scientific, technology or applications experiments within a realistic budget, as an alternative to large and costly programs which favour exotic proposals and tend to preclude small science and industrial experiments.

ACKNOWLEDGEMENTS

It is impossible to acknowledge properly the very many individuals, groups, companies, research organisations and government departments that in some way or another supported the UOSAT Project and by their efforts ensured its success. It is equally impossible to isolate those who played an essential part as, in many instances, the provision of some small or relatively inexpensive part or service resolved a potential problem which would otherwise have halted the Project dead in its tracks and ensured that UOSAT would never have made the launch date! It was their personal determination in resolving the myriad of technical and logistical problems in the shortest possible time that made the Project a success on a short timescale.

It is appropriate to acknowledge with special appreciation the contribution of the primary sponsors of the Project as it was their 'faith' in the proposal to undertake a high risk project of this nature which, in hindsight, was well justified but, at the time, appeared well nigh impossible. I would similarly like to thank Dr. Frosch at NASA Headquarters for their support of the mission, Frank Lawrence of the NASA DELTA Project Office for their advice, commitment and particular helpfulness, McDonnel Douglas and Gene Langenfeld at Western Test Range, Vandenberg for launch support.

I particularly thank Jan King (AMSAT-USA) for his very hard work, perseverence and deep commitment to ensuring the success of the Project in the face of great difficulties.

I would like to acknowledge and thank my colleagues at the University of Surrey and within AMSAT for their faith, support, determination and endurance throughout a very taxing two years. None of this would have been at all possible if they had not given freely many hours of their own time.

AMSAT-UK PUBLICATIONS

Selected items available from AMSAT-UK at the address given previously in this column. Prices include airmail and are in Pounds Sterling current as at September 1982. It is essential that Money Orders etc be made in Sterling on a UK Bank.

Bi Monthly Orbital Calendar for Oscars and RS satellites. Twelve months supply as printed	£9.00
Single copy	£1.58
High gain 28MHz Pre-Amp PCB with circuit diagram	90p
"The Best of Oscar News" Vol 1	£2.00
35mm Slide Set on UOSAT building and launch	
set of 6	£2.35
set of 20	£4.25
UOSAT Handbook	£3.00
Oscar - Amateur Radio Satellites (1976)	£6.30
Membership contribution 1 year	£9.50

VHF UHF - an expanding world

Eric Jamieson VK5LP
1 Quinns Road, Forreston, SA 5233

This will be the last of these notes to be partially prepared whilst on the "Round Australia on Highway One" trip. My special thanks to David VK5KK for providing the bulk of the information as news seems to get scarcer the further one gets from home! Next month it will be back to the usual grind and these notes should contain some information obtained from the VK5LP shack.

Twice weekly skeds have been kept with VK5KK throughout the journey, on 7 MHz, the only band suitable for coverage from the various points visited. 3.5 MHz was reasonable until the distance lengthened to 1500 km and further and signals started to lose reliability. A switch to 14 MHz produced poor results due to the time of the year and local night time. So it became a case of mixing it with the Asian stations on 7 MHz with considerable success. Equipment from the mobile/portable shack consisted of a FT7B and a set of Yaesu base loaded mobile antennae designed for a gutter mount on the car. David's signals were nearly always S9 and mine varied from S5 to S7 which we considered to be very good under the circumstances. So now with the trip nearly over it will soon be time to put away the HF equipment and get down to some solid working on the VHF bands.

Since last writing I have spent an enjoyable couple of hours talking with Joe VK4JH in Townsville and learning something about what makes the man tick, and why he is so interested in VHF. It will make the future 6 metre contacts with him that more enjoyable and we look forward to doing it one day on 2 metres!

Caught up with Ross VK4RO one Saturday morning when he was very busy with his work, but he spared me half an hour in which to talk over a few VHF matters, and to provide me with a replacement coaxial fitting as I had left mine at home. This fitting was needed to allow two rigs to be connected to the car battery at the same time. Ross was still feeling very satisfied with the 2 metre contacts he had with me and others in VK5 earlier this year. I was able to assure him the feelings were mutual.

I hope to meet with Steve VK4ZSH in Brisbane if at all possible, but it is not easy when you are one of a party of 12 people and being the only one with radio interests. There's also Tom VK2DDG at Byron Bay, but it is dependent on dates and times for a meeting to occur.

The only letter I have received in the spasmodic mail whilst touring, this month comes from Bill VK2HZ, who reports. "The disturbed ionospheric conditions of the week ending 17/7/82 provided plenty of problems and unusual conditions for HF operators. The main disturbances were midweek on Tuesday and Wednesday, the A index at one stage peaked at 133 and the K index at 8, with the solar flux figure over 250.

"This did permit Rob VK3XQ and Bill VK2HZ to QSO at 0025 UTC on 14/7/82 via the auroral region. Signals peaking S5 were badly distorted phone and CW alike. The contact lasted 10 minutes. VK3XQ was beaming south of east and VK2HZ east of south. It is quite possible other contacts via the same medium were recorded during the same period."

Thanks for writing Bill, always interested to hear on any such contacts especially when via some of the more unusual mediums.

SIX METRES TO THE NORTH

Bill Tynan W3XO writing in "QST" continues to report considerable 6 metre activity in the US. The August issue of "The World above 50 MHz" mentions, amongst other things, some more exploits of W6JKV (reported recently for his DX-peditions as C5AEH, 3D2JT and A35JT). This time he journeyed to Isla Revilla Gigedo, off the west coast of Mexico, and succeeded in putting that rare country on the 6 metre map.

Due to a mix up and other problems his linear amplifier and beam antenna were held up and he had to content himself upon arrival on the island with a 10 watt exciter and a simple vertical antenna, but nevertheless managed to work a number of US stations.

His amateur ingenuity soon came to the fore and upon finding some scraps of wire and with dimensions radioed on 6 metres by W7KMA soon had a 3 element beam of sorts working, with considerable improvement to signals, and worked more than 100 stations as far away as eastern USA and Canada.

6 METRES WITH VK5KK

Not as much DX as July. Most notable opening to VK5 was on 8/8/82 around 0300 UTC when the band was open to JA on 50MHz. No signals on 52. Tropo conditions on 22/8 enabled VK5ZEE at Woomera to work Adelaide (around 2300UTC), distance about 400 km. Neal, VK5ZEE, is currently operational on both 6 and 2 metres from Woomera. He will soon have 100 watts of SSB on 432 MHz also (around late September). He listens on 28.885 MHz.

2 METRES AND ABOVE WITH VK5KK

Good tropospheric conditions prevailed over the southern portions of Australia during the last week of August, once again created by un-seasonal weather conditions (One great big high pressure cell). Best day by far was 26/8. On 2 Metres Mick, VK5ZDR, worked quite a number of VK3 (Melbourne stations) up to 1400UTC. I only heard VK3ZCW and VK3YDE on my 3 element (still haven't got all the antennae back up again!) FM channels seemed to be buzzing with several VK7 stations being able to access the Adelaide Channel 8 Repeater early in the night. Ch3 Ballarat, Ch7 Mt. William, and Ch 6 Mt. Gambier audible from 0930 UTC on. Also Ch 5A TV (ABC) possibly from Western VK3 and Ch 6 Ballarat TV at good strength.

On 432 MHz not quite the same activity but still good conditions over quite long distances during the same periods. On 22/8/82 very good local signals but the only signal to the SE was VK5ZO at Mt Barker calling CQ (CW) at 1000 UTC. On 26/8 however, around 1200 UTC signals appeared on 432.1 MHz, although it took a while to work out where they were coming from! By 1215 UTC signals became readable and at 1220 UTC I worked Les VK3ZBJ (Frankston, 780 km.) peaking to 53 at 1224 UTC. He was in contact with Rob, VK3BHS. When Rob turned his beam at 1227 UTC his signal was a good 57, varying only by 3 S units over the next 30 minutes. Rob at Stawell, runs 20 watts to 4 x 16 element yagi's at 50 feet. Less signal exhibited virtually the same fading but at a much lower signal level due to the extra 240 km.

Locally not much more to report on apart from the drought conditions brought about by the above UNSEASONAL weather patterns. Those living in the rural sectors that are affected (not too many aren't) would rather see a more winterish pattern, even though it is nearly too late to do much good. Eric will be back at his home QTH in two weeks after travelling around the top half of Australia (Your car should be well and truly run in now, Eric!).

73 from David VK5KK.

SMIRK 50 MHz TROPHY

K5ZMS of SMIRK has been conducting a search to see who was the first station to work 50 countries on 6 metres, and Alfredo, LU3EX has been declared the winner. We congratulate Alfredo, who has done so much to put VHF on the DX map for a long time. Others who were in the running included JA1RJU, JA6RJK and KH6IAA, who will probably be eligible for the new SMIRK certificate which will be made available to operators who show proof of contacts with 50 different DXCC countries. This certificate might be very difficult for a country like Australia but one can never tell, it will come one day without doubt.

Having nothing else to report at this stage it seems appropriate to conclude. By the time you read this we should be in the middle of the spring equinox with the possibility of a few late F2 and other tropo contacts.

Closing with the thought for the month. "The best measure of a man's honesty isn't his income tax return. It's the zero adjustment on his bathroom scales." 73. "The Voice in the Hills."

LETTERS TO THE EDITOR

Any opinion expressed under this heading is the individual opinion of the writer and does not necessarily coincide with that of the publisher.

The Editor,

60 Yellow Rock Rd.
Uranga, NSW 2455

Dear Sir

Late one evening on 80 metres on the 3rd August last, I heard a group of amateurs on the novice section indulging in rather un-amateur like communications. After listening for some time, I heard a VK5 station break in to request the use of call signs. The group apparently took umbrage at being requested to the use of call signs. The VK5 station then pointed out, quite correctly it was good manners to use callsigns when signing and finishing an over. I also helped set a good example for the new amateurs joining the band. At this point the VK5 signed and went clear. Where upon he was immediately denigrated, by the remaining VK2 stations for his "narrow mindedness" by requesting true amateur status be preserved on the amateur bands. About this time two other stations were heard to "break" one being a ZL station the other a local novice.

What ensued was a good example of bad manners various overs being conducted, without inviting the ZL to join in. They had indicated they heard the ZL station when first he "Broke". At this time another station broke in to inform them that the ZL had not been invited to join the group.

This was noted and a while later they decided to call the ZL in. Ten minutes would have elapsed from when he first tried to "break in". Naturally the New Zealand station had grown tired of being "left out in the cold." Sure y sir, we don't require such rudeness on the amateur Bands.

Yours sincerely
B H Lackie VK2DLM

P.O. Box 1319, Southport,
Gold Coast, Qld. 4215

The Editor

Dear Sir

Through this magazine I wish to express my views on what appears to me to be the thin edge of the wedge to the annihilation of amateur radio as we know it today.

Up to only a few years ago, to be an amateur radio operator required someone with the necessary technical and mechanical expertise to make or assemble the apparatus known as a radio transmitter or receiver. Today I would guess that 99% of us buy commercial equipment ready to go, for a variety of reasons. First and foremost is resale value of used equipment. Second would be pride of ownership of the latest and best. Thirdly, anyone who dares to say "I made it" is considered some kind of nut.

What all this means is that you do not require any technical expertise at all to operate a modern transceiver. Modern equipment is also very complex, so most persons shy off doing their own repairs. So this has set the stage for the non-amateur — the Pirate! He or she can buy the latest transceiver (no license required) can install it at home, car or boat (no technical skill required) will operate illegally using made up callsigns and when it cracks up will take it to your local radio repair specialist for repairs and no questions asked.

Now how about the trade answering a few pertinent questions.

1. How many transceivers capable of being used on amateur bands were brought into this country in the last five years.
2. How many were sold?
3. How many were sold to licensed operators?
4. Would retailers be willing to put their name to a list to be published in this magazine stating that they have not and will not sell to unlicensed operators?
5. Will this magazine publish such a list, so all concerned amateurs can blacklist those not on the list?

I feel that a quick survey of retailers will soon sort out those who feel that as long as the pirate operator behaves one's self, he/she is best left alone. This action condones piracy!!

What is the attitude of amateurs to the Pirate menace, at individual, club and WIA level? I believe that by their inaction, the WIA stands condemned. Why hasn't the WIA for the protection of its members, present and future, taken a hard core line with DOC on this matter?

Why don't Amateurs as individuals stand up and be counted on issues? Because in general, we are nice guys on air and "do nothings" off it.

How do you stop the rot? By changing the Law to make it mandatory for all sales of transmitting equipment to be sold only to licensed operators. This must be done at the point of sale — the retailer. He must also keep a list of all transceivers bought and sold along with make/model/S/N the same as the dealer in pistols or motor vehicles has to do.

Will the WIA take up the challenge?

Yours faithfully,
Nev Wright VK4ANW

Editor's note:-

One of the WIA's policies for many years has been 'point of sale licensing' and/or making the retailer responsible for ensuring transmitting equipment goes only to those licensed to use it.

We open here unfortunately a 'Pandoras Box' — how can it be enforced? What about used equipment?

Current legislation allows the sale of imported radio equipment by any person capable of obtaining the necessary customs clearance.

The Trade Practices Act (Restrictive Trade Section) and possible libel charges are only 2 items we have to contend with.

The issue is very complex and DOC have been most helpful in the past, but the matter is not altogether under DOC control.

Can you offer a concrete suggestion as to how this may be implemented with satisfaction to all parties concerned?

Bruce VK3UV
114 Frederick Street, Launceston 7250

The Editor,

Dear Sir,

In addition to my letter of A.R. June-82 may I point out that the badge or logo is the symbol of the WIA. It is used on many occasions such as letterheads, QSL cards and many other applications. To use a different design in conjunction with the original one is diametrically opposed to the original idea. The recent application form distributed by the WIA is a case in question. Is it absolutely necessary to have another design plus the extra cost of new dies — extra printing — one badge on this publication (Tasmanian QRM for August with the so called diamond displayed) another badge on another — and on another two badges. Unless action to drop the diamond is forthcoming — and given a little time, our true and faithful logo will be confined to the dust bin and become a part of history. The reply from Geoff Atkinson VK3YFA (A.R.-July-1982) is not sufficient reason for the change nor the reason contained in the WIA Book Vol I.

If you want to split the organization this is one way of doing it. The adoption of a further logo will in no way compensate for the possible damage it can do to the WIA. And may I thank Chris Walker VK3DDX for his timely support as I was beginning to think I was a lone voice crying in the wilderness.

Yours faithfully
Leslie Arnold VK7AM
582 Kooringal Road
Wagga Wagga, 2650

The Editor

Dear Sir,

I refer to the "Letter to Editor" published in August, 1982, issue of "Amateur Radio," in which Mr T.P. Kelly (VK4NRE) opposes the extension of operating privileges to Novice operators and calls upon Federal Council to recommend a five-year tenure with re-examinations.

I point out that Mr Kelly is quite entitled to hold opinions and to offer suggestions. However I have had something to do with the Novice project and have no reason to offer complaint against Novices who, for reasons similar to Mr Kelly's "personal reasons and ill-health" fail to up-grade to Limited or AOCP status. One must remember that this is a LEISURE ACTIVITY and NOT a vocational situation. Also, I have been pleasantly surprised by the number of Novices who HAVE upgraded.

The "limited tenure" principle was suggested in the report submitted initially to Federal Council in the distant past when the Institute was involved in a "civil war" regarding the issue of "Novices or not". However as our Committee extended its surveys and investigations, it was apparent that the majority of licensed AOCP and Limited Amateur Operators did NOT favour a limited tenure, whereupon our Committee presented a Supplementary Report in which this attitude was expressed.

There are many retired and not-so-healthy Novices for whom this Amateur Radio activity is of real therapeutic value. There are others of limited ability to handle study at the levels required for AOCP qualifications. Others have specific learning and educational problems, while family and business responsibilities inhibit the progress of others. In my opinion the Novice project was the best "shot in the arm" that the Amateur Service has had in decades.

I take issue with Mr Kelly's statement that "This class was introduced to get "budding AOCPs on air". One can well suspect that Novice class was approved by the Department in order to provide an alternative to the C.B. illegal operation during

the invasion of the 27 MHz Amateur Band, together with unlicensed and uncontrolled occupancy of spectrum areas allocated to other Services. The Amateur Service has gained a degree of extra membership from people who "got their feet wet" in C.B. licensed or "pirate". However now that C.B. is into a severe decline, this pool of potential Amateurs is drying up, so the Amateur Service should be examining alternative areas of recruitment. If Mr Kelly's repressive notions take hold of W.I.A. policy, then we are liable to place further obstacles in the expansion of the Amateur Service.

Yours faithfully,

Rex Black (VK2YA)
Former Chairman of the Federal
W.A. Novice Investigation Committee

Box 342 Kalgoorlie 6430

The Editor,
Dear Sir,

I am writing this letter for possible publication in AR for operators with computers and who enter contests. I worked the recent R.D. Contest to be able to test this programme under normal contest conditions with good results. The only problem I had, which was fortunate, was when my offsider pulled the plug on the computer. The programme has a data dump routine in case something like this happens or in case of power failure. We loaded the data of callsigns back into the computer and ran a check with a result of a small problem. In checking the 5 call area, 2½ hours later we had the programme operating correctly. In the first 12 hours before computer power failure we had a total of 9 VK5's duplicated owing to the programme fault, one VK3 and one VK4 due to operator typing errors. This was from a total amount of 420 contacts with a further 157 contacts with no more duplications.

The operation of the programme is for dupe checking only and still requires a pencil man to take times, number and any other information that is required for the particular contest.

The programme also, after every 20 contacts, puts the callsigns to tape in case of any failure.

My computer is a 'System 80'.

If anyone is interested, I will supply a printout of the programme if they can send a large stamped envelope to my QTHR or if required a blank tape with envelope.

Yours sincerely,
D. Schneider VK6NHX

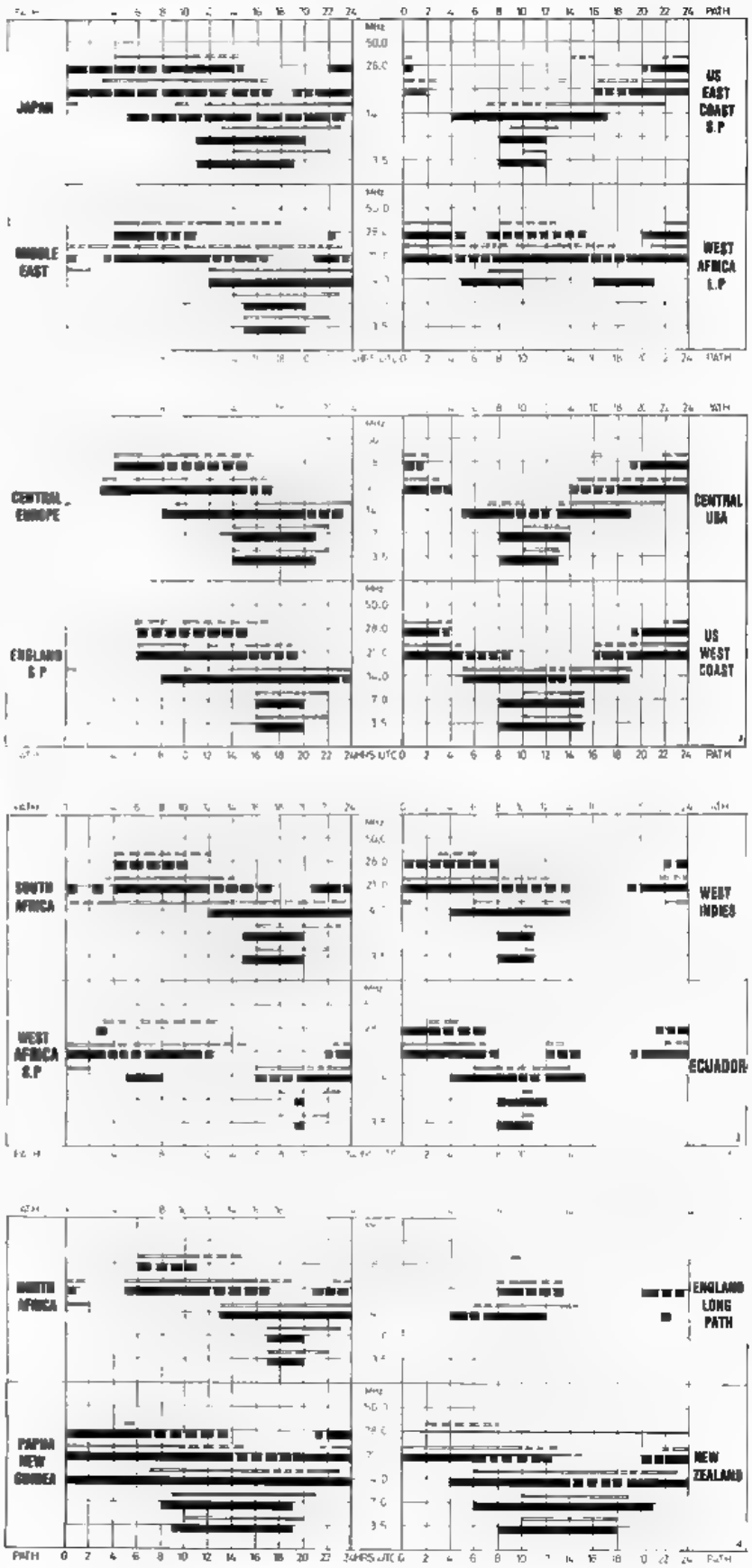
SPECIAL EDUCATION QSP

Brenda VK3KT has available:
Trial Exam Papers —
Theory, Novice, AOCP, Regulations.
Past CW Exams from DOC.
10 Exams at 5 w.p.m.
10 Exams at 10 w.p.m.
10 Exams fill a C60 tape. Send a tape and I will copy what you want onto it.
Complaints — or other comments — about Exam papers?

Make them known to your Federal Education Officer, VK3KT, QTHR, or on the Education Net, Wednesday evenings 12.00 UTC. 3.685 MHz±.

IONOSPHERIC PREDICTIONS

Len Poynter
VK3BYE



NATIONAL EMC ADVISORY SERVICE

The National EMC Advisory Service would like to remind all Amateurs of the importance of giving every consideration to the susceptibility factor of their receiving equipment before investigating or filing complaints regarding what appears to be commercial or non amateur signals within our bands.

Receiving equipment can, and quite often does, suffer from one or more of the following internal problems:— Spurious responses, Selectivity problems, intermodulation products, cross-modulation, and blocking.

If there is any doubt about your receiving equipment, try to borrow another receiver, preferably one with a known good immunity rating. Or, provide your existing equipment with a good front-end filter.

Silent Keys

It is with deep regret we record the passing of—

Mr. E. M. Bailey	VK2BB
Mr. M. J. G. Brims	ex XQA
Mr. R. A. Jones	VK3WL
Mr. A. F. Marshall	VK4AF
Mr. W. E. Pearson	VK6BZ ex VK2LH

Obituaries

EDGAR MERTON BAILEY. VK2BB

Eddie VK2BB passed away suddenly on 5th August at his home in Eungella. He was 59 years old.

He leaves a wife, two sons, Graham and Raymond and two grandchildren. Eddie served with the 2/1 Batt. A I F in New Guinea in WWII. I well remember Eddie, who became a very close friend, when we had our first Amateur Radio contact in December 1957. I visited him in 1958 on his family homestead at Eungella, where he was dairy farming and running a jersey studfarm. In later years he sold this property and took up radio as a profession, he worked as a service man for a firm in Murwillumbah however following a heart attack in 1977 he was forced to retire.

Eddie loved country life and was fond of animals, especially cattle and he was a keen member of the Agricultural Society and a member of the Murwillumbah Show Society committee, on which he served for a number of years.

He formed the high school radio club in Murwillumbah and was an instructor to the club and he also worked in a voluntary capacity at the Salvation Army Thrift shop as "Mr Fixit".

His funeral on August 10th was attended by a large congregation in the Uniting Church, Murwillumbah followed by a graveside service conducted by Rev. H. Sampson, Capt. K. Holland, and a member of the RSL and all spoke very highly of Eddie.

Eddie was a son-in-law of Charlie VK2AZK. He was a member of the W. I. A. since he obtained his call. On behalf of all amateurs I extend to his wife Phil, and all his family our deepest sympathy.

Frank VK4FN.

MARCUS BRIMS .EX XQA

Marcus, who featured in a "thumbnail sketch" in June "Amateur Radio, failed to survive an attack of 'flu in late July. He was 94 and when I spoke to him about a year ago he was, for his age active mentally and physically, although his memory was failing.

Marcus was always interested in new equipment and devices and the modern family plywood business reflects that interest. An example was a Ransoms electric truck which was in use during the first quarter of this century.

In the early days of Qantas the sheeting on the English 'planes such as De Haviland, failed rapidly and Brims supplied an acceptable substitute such that new 'planes had the sheeting replaced on arrival in Australia. This led to the manufacture of 'planes for some years by the firm.

Marcus is survived by a son John to whom we pass our sympathy. Hopefully one day we will see the 1914 amateur station of Marcus Brims re-erected in a permanent location.

Peter VK4PJ

SYD DAHL VK4VT

On 25th July this year, at the age of 77, Syd Dahl VK4VT died in a North Queensland hospital, bringing to its close a full and fruitful life.

He was born near Palmerston North in New Zealand, and came to Australia as a child. Notwithstanding his Kiwi beginnings, he became in thought, language and lifestyle a "Truer Blue" Aussie than most who were born here.

Syd had a good education and became a qualified surveyor. He was a generous, intelligent man, with a perceptive appreciation of literature, history, poetry and what have come to be called the "finer things in life". Above all, he had a good sense of humour and an acid wit. He also had a direct and sometimes abrasive way of expressing his thoughts and feelings in the voice which earned him the nickname "Old Gravel". Underneath all this he was truly a rough diamond.

I first met him on air in 1967 as VK9KA Pt. Moresby where he was a surveyor in the employ of PNG government, as he had been for many years. On retirement he and his wife came to live at Innisfail N.Q., where he died about ten years later.

He was a stalwart for the WIA and its objectives, and most mornings was on the 14.150 VK3UE Net, where he stimulated some lively discussions.

His many friends, in and out of the Amateur world, will miss him deeply. I know I shall, for I am proud to have been a friend of Syd Dahl.

Doug VK4RP

ARCH MARSHALL VK4AF

Born a son of the local village blacksmith, at Clifton, Q., on the 8th August, 1907, Arch Marshall lived most of his life there, and passed away on 22nd May, 1982, in the Clifton Hospital, a short distance from his old home and birthplace.

Early in life his interests turned to the intriguing hobby of radio, and it was not long after his secondary schooling at the Warwick Technical College he was awarded an A.O.C.P. — dated 25th. Sept. 1928. Whilst resident, and in conjunction with a few fellow Amateurs over the years, he activated Clifton radio-wise till only a few short days before his death. His last QSO was on 2 metre, simplex, to tell me he was "feeling pretty ill" with his attack of the prevailing 'flu, on 18/5/82. Later he rang to say he was being "bulldozed" into hospital —by four ladies (relatives) and the Dr. Arch had a very independent nature! Three days in hospital saw him improving as regards the 'flu, but in the early hours of Sat. 22nd., the heart gave up the struggle before the body, and Arch peacefully answered the roll-call for Silent Keys.

He remained a single man through life, a quiet unassuming man, happy with his lot in life, but always a conscientious, capable and respected workman at all his tasks. His trade involved carrying on the blacksmithing, engineering and fitting-and-turning business as partner with his brother. His army life was spent as an instrument-maker. Rifle shooting and fishing shared his hobbies with radio. I know, too, over the last few years how much he enjoyed sharing our day trips to the Australian bush — for a little prospecting, or maybe just for the scent of wattle blossom and perfume of burning gum leaves as we boiled the billy! On radio,Arch qualified easily as a model and example of an operator befitting our code of ethics.

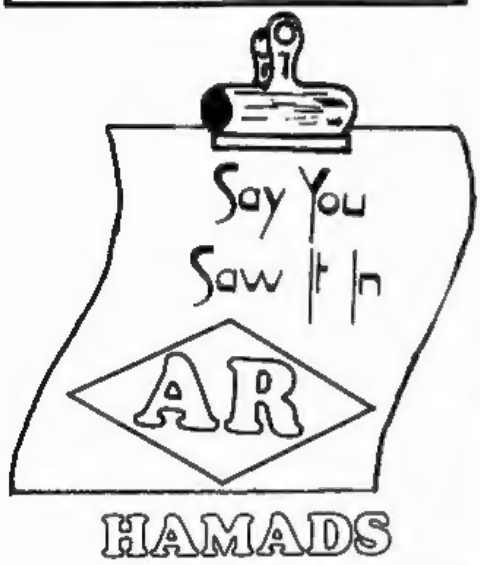
His first contact I find recorded, without frequency used, was a reply to a CQ on 21/7/29 by VK2JZ, report Q4 R5, the input power for the CQ was 1.08 watts. On 29/7/29 the power had dropped to .75 watts (maybe the dry cells were going flat)! First contact on 20 metres recorded on 15/2/30, to quote "Sat. night after the pictures" 10.45 pm with VK3JK, report Q4, followed by VK7DX, at Q3 R5 — with an improved input power of 1.8 watts!

Appreciation is expressed by the Darling Downs Radio Club for receipt of his radio equipment, which Arch bequeathed to the Club. In due course, hopefully before year's end, proceeds from this will help finance a new 2 metre Repeater for VK4RDD, to be dedicated to our late member — VK4AF.

To all his relatives we extend our condolences— Amateur Radio shares the sorrow, and the loss, with them.

Jim VK4QC

ADVERTISERS' INDEX



HAMADS

PLEASE NOTE: If you are advertising items FOR SALE and WANTED, please write on separate sheets, including ALL details, e.g. Name, Address, on both. Please write copy for your Hamad as clearly as possible, preferably typed.

- Eight lines free to all WIA members.
  $9 per 10 words minimum for non-members.
- Copy in typescript please or in block letters to P.O. Box 150, Toorak, Vic. 3142.
- Repeats may be charged at full rates.
- Closing date: 1st day of the month preceding publication. Cancellations received after about 12th of the month cannot be processed.
- QTHR means address is correct as set out in the WIA current Call Book.

TRADE HAMADS

Conditions for commercial advertising are as follows: The rate is $15 for 4 lines, plus $2 per line (or part thereof) minimum charge $15 pre-payable. Copy is required by the first day of the month preceding publication.

Ordinary Hamads submitted from members who are deemed to be in the general electronics retail and wholesale distributive trades should be certified as referring only to private articles not being resold for merchandising purposes.

Amidon Ferromagnetic Cores: Large range for all receiver and transmitter applications. For data and price list send 105 x 220 SASE to: R.J. & U.S. Imports, Box 157, Mortdale, NSW 2223. (No enquiries at office: 11 Macken St., Oakley, 2223).

CB Radios $69; walkie talkies, short wave radios, military, outback, business, amateur, marine, repairs, RTTY Siemens 100A printer $120; base mic., $45; ultrasonic alarm, $35; all ham bands on a single 6 ft. whip 1.8 to 30 MHz, for base or mobile, $300; aerials, installation, demonstrations, 40 ch. CB conversions, accessories, new rigs weekly. Bridge Disposals, 12 Old Town Plaza, opp. Bankstown Railway Station, NSW. Mail order service and all enquiries to 2 Griffith Avenue, Roseville 2069, or phone Sam VK2BVS, 7 p.m. to 9 p.m. only, on (02) 407 1066.

IEEE 696 ($100) 64K memory cards by Static Memory Systems. Use 2Kx8 RAMs or 2716 EPROMs. Kit less RAM $178, A & T less RAM $201. Also Godbout cards and a large range of CPM software. Bits and Bauds. 25 Lotus Cres., Mulgrave. 3170. Phone: (03) 546 4830.

WANTED — VIC

Medals: Ex-serviceman and private collector wants military memorabilia and medals for collection, anything will be gladly accepted. Ph. (03) 221 5819 or write to Box 75, Moorooibark, 3138.

WANTED — QLD.

ICOM720A Contact VK4PL QTHR or phone (07) 358 4884.

FOR SALE — ACT

Collins: 75S-3C $1,000 ... 30L-1 Linear $1,000. Enjoy classical clear 2.1 kHz reception. Transmit some cool clean SSB "Hi Fi" from 4 x 572Bs. Genuine surplus to collection. George VK1GB (062) 54 1985.

FOR SALE — NSW

DECEASED ESTATE (VK6BZ ex VK2LH): Swan 500 TXCVR ext. VFO, AC PSU, VOX, $200. Ken KP202 handheld, xtals for R1-5, 7, 8 plus simplex 40 and 50 with NiCd/charger, $120. FRG-7 Rx, $185. Contact David VK2KLX Phone (02) 476 1048 or Alan VK2GR Phone (02) 680 2538.

FRG-7000 New General Coverage Rx. Digi display clock, programmable timer. $400 ONO VK2FW Phone (063) 62 9335.

FT200 TCVR EC. No Mods. Power supply, mic, manual, new spare finals avail. $295 Max VK2GE Ph. (043) 92 4900.

ICOM 2M TXCVR IC22S $150 ONO, ICOM Remote control ICRM3 $100 ONO, QM70 2M. transverter 100 Watts $100 ONO. Bob VK2BYF QTHR Phone (02) 727 5629

KENWOOD 2 METRE Hand Held 2400 - a few weeks old. Under warranty, with ext. & 9 volt supply. Speaker/mic. $240 freight inc. moving away from repeater. VK2ATE QTHR. Phone (048) 61 2725.

KENWOOD TS 180S with match speak. SP180, ext. VFO, 2 extra Xtal filters, mint cond., only 12 months old. $870. Quarts 16, 2 m FM Txcvr. 9 repeat. and 4 simplex channels fitted, $150. VK2BHF. Ph. (02) 981 4762.

Morse Hand Key P M G type in GC wanted by CW enthusasiast. Will pay what is required to obtain. VK2DET Blackheath NSW Ph (047) 87 7003.

Swan 350 Txcvr. with match. power supply, op. manual, spare sets of valves and finals, $250. Realistic DX 160 comm. rcvr. with match. speaker unit and op. manual, little use, EC $120, ONO VK2CG, QTHR. Phone: (02) 637 2472.

Teletype Model 14 tape perforator, model without keyboard — $15. Model 14 single head tape distributor — $15. VK2EL QTHR (02) 523 1293.

YAESU FT-7B with YC-7B Digi. readout, EC, in original cartons, with manuals. Novice 10m. Xtal plus 11m X-tals. Both for $600 Phil VK2VII. Phone (044) 21 0039 or write: P.O. Box 157, Nowra, 2541.

YAESU FT101E complete EC. 160m to 10m original packing $550 plus ex. speak. $50. Yagi beam 3 el. Monoband 10m. as new $75. Tony QTHR (067) 68 7020.

FOR SALE — VIC

Collins Comm. Recvr. R278, UHF, 1750 Chan. 225 to 400 MHz, triple conversion, modular construction, 230/115VAC, spare valves avail., ex. RAAF, $175. VK3BFB, QTHR, (03) 583 1638.

Collins "S" Line. 75S-3B Rxcvr. with 500 Hz. CW Filter. 312B-3 Speak. Console. 32S-1 Transmit. with heavy duty power supply. 39 Spare Tubes, Handbooks, cables. $800. VK3ARY QTHR. (03) 277 4798.

Daiwa 144 MHz Receiver. Repeaters 3, 7, 8, Simplex 40 & 50 fitted. V.F.O. tunes 146-152 MHz. with mounting bracket. GC. $50. RCA Slow scan TV Vidicon tube type 8507A. $20. Ron L30997 QTHR. (053) 35 6017.

Duo Band Beam, 15m and 10m, 3 elements on each, mono bands with sep. gamma matches, W. Wulf design, EC. $90. Rex Rotary Duplicator with large supply ink and stencils, motorised 2 speed or manual operation, instruction handbook, useful for clubs, pamphlets, newsletters etc., GC. $120. RTTY Gear, Model 15 Teletype with cover and all keys on keyboard intact, vy clean, governed motor, some RTTY books and info, HB loop supply, ETI Mod/demod built in comm. type box, will demonstrate if required, (requires 115 vAC at 2 amps, transformer NOT included) the lot $165 will separate mod/demod. B Bathols VK3UV QTHR Phone (03) 580 6424.

IC215 2 m. port. xcvr, chan. 2, 3, 5, 8, 40, 49 & 50 reverse 5 & 8. As new incl. 2 amp power sup. and mobile bracket $165 lot. VK3BNJ Phone (03) 743 6708. Stan Korczynski, 53 Westmelton Dve., Melton Vic. 3337.

IC-502, 52 MHz A3A TRx, Good order, have worked DX, now superceded. $200 ONO. VK3ZCO, QTHR, (03) 45 2506, most times.

Radio and Electronics Test Equipment: Double-beam CRO, work cond., $120 firm; Chart-recorder and paper, work cond., $40 ONO; Valve-tester and Geiger-counter, cond. unknown, $15 each ONO and other antique radio gear avail. from Melbourne Uni. Radio and Electronics Club; John, VK3ATM, QTHR. Ph. (03) 459 1151 A.H.

Shack Cleanup: IC211 All mode 2 m. Txcvr, 10w FM, 3w SSB and CW, covers 144 to 148 MHz. $550 ONO. Two section triangular tower with drawings but no calcs, 40 ft. but may be adapted to 60 ft. $400. CB set Gemtronics GTX 2325 unconverted $100. Non-operational PRC10a txcvr. 30-60 MHz. $30. VK3ZTS/VPT QTHR Phone (03) 546 4830.

KW 2000B 160-10m. SSB/CWTxcvr 180W. PEP with spkr/PSU and H/book, $400. Kenwood TR2200G 2m 1w Port. with Nicads, simp. 40, 50, 51, Reps 1-8, $125. VK3VB QTHR. Phone (03) 781 2614.

LINEAR AMPLIFIER — Yaesu FL 2100B, 80-10m, GC — $375. VK3UV, QTHR. Phone (03) 580 6424.

YAESU FC107 250W ATU, 160-10Mx, incl. WARC bands, Twin Meters, Watt meter, as new in carton, $165 ONO. Yaesu 9 MHz 8 pole xtal filter, 2.4kHz B/width, replacement for FT301/FT7 series, new, $45. Kenwood R820 receiver, amateur and SW bands, IF shift, PBT IF notch, digi. readout, etc., little use, PC, cost over $1100, must sell, $550 ONO (incl. outboard Woodpecker blanker). VK3ARZ QTHR. Phone (03) 584 9512.

YAESU FL-2100B Linear amp. In immac. cond, with h'book, $430. VK3BCN. Ph. (03) 370 6092.

FOR SALE — QLD.

A R R L Handbooks 1938, 1943, 1946, 1973 R S G B "Amateur Radio Handbook 3rd Edition 1963. "Radio" handbook (U S A) 1936. 2E26; 803 Valves, What offers? Hal, VK4DO Phone (079) 28 1550.

Collins 75S-3 Rx with noise blank. installed and Collins 32S-1 transmit. Both are owned since new and are in orig. and top cond. Some spare valves are also inc. with these. Now is the chance to get the best at a reasonable price of $575 for the pair as they are surplus to my needs. If not sold they will be taken to U S A and traded in on new equipment in December. Gene, VK4AJ. QTHR. Phone (076) 38 1113.

ICOM 701 HF Txcvr as new plus RM3 computerized controller. $800 will separate. Kenwood R1000 Rcvr. P/C. $375. Ken TR-2400 P/C $210. VK4PL QTHR (07) 358 4884.

Shack Sale Kenwood 120v with VF0120 and SP120 All in GC $530 for the lot. Phone Kevin VK4VKX (074) 22 2247.

TR7625 5/25W 2m FM $275 M/M bracket manual leads. GC QM70 50w transverter 28/144 SSB manual leads for FT101 FT200 etc. $80. SE502 28 MHz S'WR/Pwr meter built in 240V/13.8 DC. Leads manual m/m bracket. $100 GC. Noel QTHR VK4VCG/ZGO, Ph. (070) 68 5249.

Yaesu FT 0X 401 with spares and h'book, 300w output, incl. CW filter and RF pre-amp $425, also match. FV 401 VFO as new $125. Fred VK4RF QTHR. Phone (07) 200 7916 anytime.

FOR SALE — WA

Yaesu FT7 comp. in orig. carton $350. Reg. power supply to match (6 amp at 13.5V) $45. VK6AZ QTHR. Phone (090) 271 4244.